JPRS-WST-84-029

24 August 1984

West Europe Report

SCIENCE AND TECHNOLOGY

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ADVANCED MATERIALS

BRIEFS

EUROPEAN COMPOSITE MATERIALS INSTITUTE--Bordeaux--The IMC [Composite Materials Institute]--the first research and information center of this kind in Europe--was inaugurated 5 July at Bordeaux-Pessac in the presence of numerous European scientists and manufacturers of composite-materials products. The IMC was created in October 1983 under a cooperative arrangement among the public authorities (national and regional), various research centers (AEC [Atomic Energy Commission], Bourdeaux University) and several big industrial groups (SEP [European Propulsion Company], Elf, Dassault and AEROSPATIALE [National Industrial Aerospace Company]. Its main mission, according to its founders, is "to promote assistance to the PME's [Small- and Medium-Sized Businesses] and PMI's [Small- and Medium-Sized Industries] and technological tranfers to them of the knowledge and know-how now in the hands of the big industrial groups and research centers. With this in mind, IMC, which employs some dozen highly qualified persons full-time in each sector of its activities, has installed a data bank--data-processed technical, scientific and economic documentations--and an operating center. IMC is financed by subsidies from the Aquitaine regional public establishment and from the Ministry of Industry and Research, and by assessments levied on big industrial groups Mindustrie [as published]. Since its founding, IMC has processed some 60 technological assistance dossiers and 4 dossiers concerning the founding of enterprises whose products will be made exclusively of composite materials. [Text] [Paris AFP SCIENCES in French 5 July 84 p 42] 9238

RHONE-POULENC CERAMICS INVESTMENTS--Rhone-Poulenc is considering investing in technical ceramics. Pierre Desalos, of the Department of Innovation, is in charge of the project. His mission is to study potential markets in the electronics and engine-manufacturing industries and to determine what position the chemist should assume in the chain of people working with ceramics (chemist, ceramist, end user). Rhone-Poulenc's ambitions are legitimate: the group produces ceramic base-products (alumina, zirconia, rare-earth oxides). But it must orient its research labs toward the synthesis of fine powders (doped zirconia and titanates). [Text] [Paris L'USINE NOUVELLE in French 5 Jul 84 p 23] 9294

CSO: 3698/547

AEROSPACE

LACK OF STATE SUPPORT THREATENS NETHERLANDS AEROSPACE INDUSTRY

Rijswijk PT AKTUEEL in Dutch 6 Jun 84 pp 3, 4

[Article by Tjeerd Dorlandt: "Fokker Testing Activities Lead to Strong Satellite; But Continuity of Netherlands Aerospace Industry Is Another Matter." For related article see JPRS WORLDWIDE REPORT: TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT No. TTP-84-019 dated 11 July 84 pp 88-89]

> [Text] Fokker Aerospace has recently successfully completed its testing (load tests) of the structure of the new Olympus-1 satellite (formerly called L-sat). This means that Fokker now can proceed with the production of parts for this very large communications satellite. And yet, negative noises dominated the press conference at Schiphol-East. All signs indicate that the Dutch government is not ready to go along with doubling the budget during the second half of the eighties as requested by the industry, and that efforts in this area are now being substantially increased. This combination could lead to a situation in which the Dutch aerospace industry, with Fokker in the lead, would increasingly be able to get only crumbs in the future and this cannot possibly lead to profits. This would mean the end for Fokker's aerospace division.

One of the consequences, among others, of shutting down the testing program at Fokker is that the structure (the shell, body) of the Olympus satellite has been found to be strong enough to withstand both a launching by an Ariane III rocket (which is now considered reliable enough) and a launching and possible return by the space ferry Space Shuttle. In the latter case, very extreme forces could be generated, due to the sudden contact of the space shuttle with the atmosphere (a radial force of more than 22 tons and an axial force of slightly more than 23 tons; according to Project Manager Olivierse, the figures for an Ariane launching are about 40 percent lower). The structure of the satellite, an aluminum-titanium construction (for the moment, carbon fibers have not yet been sufficiently tested to be applied, but this will undoubtedly be done with future Olympus as well as Ariane variants) is more than 3 meters long, approximately 1 meter in diameter and weighs 200 kilograms. A payload of approximately 2,800 kilograms must be hung and coupled to this and into this. That means that the greatest demands must be made on the structure of the satellite, demands to which a safety margin of 50 percent had to be added

to the Shuttle figures...This turned out to be impossible in one step; with just the load of the Shuttle figures a few folds developed in the middle shell fields of the structure (hence, the calculation models used proved not to be perfect). However, the use of a few aluminum reinforcing bars proved to be an adequate remedy, said Oliviers.

Solar Cell Sheets

Now that Fokker has completed its testing program (a job on which 40 technicians worked for 6 weeks), the test model will be subjected to an expanded dynamic test (Fokker itself took care of the static part of the test) by British Aerospace in England and by the Canadian research laboratory DFL. Meanwhile, Fokker can continue with the manufacturing of Service Modules (these will house the satellite systems) and Propulsion Modules (in which the propulsion rocket will be housed). In addition, Fokker is involved in the Olympus project among other things as ancillary supplier of Spar Limited (Canada) for the construction of the structure and mechanical parts of the satellite's two solar panels. The panels of the Olympus-1 will have a span of 10.8 meters and are equipped with unrollable sheets covered with solar cells which can produce 3 kilowatts (even after 10 years of "service"). Later versions will be equipped with panels twice this size, which will produce an electrical capacity in keeping with their size.

Netherlands Share Exceptionally High

Overall, the aeospace division of Fokker (work force 240 employees) is involved in the Olympus project at the level of 50 million guilders. On the Dutch side, Hollandse Signaal and TNO [Netherlands Central Organization for Applied Scientific Research] are participants in this project. Including these the Dutch share in this ESA [European Space Agency] project amounts to 11.15 percent (size of orders to various enterprises: more than 750 million guilders) and that is exceptionally high. Hence, the impact of the Olympus continuation program is comparable: in this sector of large multi-faceted commercial communication satellites (in fact, the Olympus is a standardized platform on which equipment for various telecommunication ends, such as television broadcasts, data transmission and video conferences, can be mounted. Olympus-1 will be used primarily for demonstration purposes, among other things for television broadcasts and data transmission) there will be a need for 200 such satellites between now and the year 2000. The Olympus variants could take at least 15 percent of that market.

Too Small a Vote

However, it looks as if, following the national programs of the ANS [Netherlands Astronomical Satellite] and IRAS [Infrared Astronomy Satellite] and participation in the Olympus, no real contribution by the Netherlands in space travel can be expected for the time being. Today's contribution by the government to the Dutch aerospace efforts amounts to approximately 100 million guilders on an annual basis and the industry, with Fokker in the lead, feels that this is far too little. In our neighboring countries government aerospace spending is growing substantially (France more than 30 percent; Italy more than 20 percent)

and that means that those countries will have a much greater voice in the matter. The countries with a smaller share are taken less seriously and thus it could happen that a company with a technically good and in terms of price a certainly competitive product will not be employed as a subcontractor because the country of registration has in fact too small a "vote." Fokker is afraid that this development will be increasingly true for itself, and therefore it took advantage of the completion of its Olympus-1 tests to plead for an increase in the Dutch budget (which will be published by the end of the year in the sequel to the Aerospace Memorandum).

Savings in Spoiled Concrete

So far interim lobbying, specifically in the Ministry of Economic Affairs [EZ], has done little good, Marketing Manager Rouppe van der Voort had to admit disconsolately. "Some officials within the EZ simply don't want to listen to reasonable arguments and then this marketing person is at the end of his tether," said Rouppe van der Voort. In addition, this not very stimulating attitude by the government is caused by the fact that space travel is not an area of impact or a key area and by the fact that it is much easier to calculate the costs than the proceeds and the expected proceeds. Aerospace Director Dr R.J. Duinen characterized it as follows: "Weather satellites have already saved so many building contractors from spoiled concrete... macro-economically speaking space travel has long since earned its way." "What the PTT [Posts, Telephone and Telegraph Administration] has earned with Intelsat is mind-boggling, especially given the high rates in the Netherlands. What we say is: government, buy those aerospace things now; you need them. That is quite different from asking for a subsidy. The government should see space travel as an infrastructure on which a young industry could grow. Give us a foot in the door; then we will continue to operate it commercially. However, if the government takes a step backward, then 5 years from now we will no longer be able to do so."

Four Stage Carrier Rocket

In concrete terms, Fokker wants the Dutch government to appropriate 250 million guilders annually during the second half of the eighties (the period covered by the sequel to the Aerospace Memorandum). Three-fifths of that should be allocated to the compulsory scientific program of the ESA and the remainder to a possible national program (for the moment, two-thirds of the total government budgets in Europe are spent on national programs, the remainder is for the ESA -- a situation which was more than reversed 10 years ago) and/or voluntary ESA projects, such as growth versions of the Olympus and the yet to be developed Ariane four stage carrier rocket. Without a substantial increase in the government budget, Van Duinen anticipates a phasing out of the Dutch aerospace industry. (It is estimated that worldwide, by 1986 this branch of industry will represent a contractual value of 5 billion guilders, in addition to the government share.) Thus this would also mean the end of Fokker's space division; its intellectual capital would return to the womb of the much larger airplane division (currently, aerospace produces less than 5 percent of the total company turnover). Without a substantial extra government effort (Rouppe van der Voort would be satisfied with a Dutch share in the ESA context of

5.4 percent, corresponding to our GNP; as far as he is concerned a national program could then be omitted) there will be too few opportunities for Fokker Aerospace to develop into a durable profit center.

Space Travel Not a Commercial Market

This also applies to the few other enterprises in the Netherlands which are geared toward space travel, and this in turn leads to the fact that there can be no question of either a spectacular spin-off in the form of new businesses and business divisions or of the large scale application of aerospace techniques in derivative sectors. At the EZ they are not all that impressed by these arguments however; late last year, at an aerospace symposium in Eindhoven, R.F. de Bruine, director of General Technology Policy at the EZ, already indicated that the government's budget is limited and that therefore the ultimate commercial usefulness must always be kept in mind. Those prospects are not considered too favorable. De Bruine noted that "the aerospace market is not a really commercial market and may never be one either. The government is still needed to provide orders for the industry." And: "There must be support for space travel; we don't buy anything for obsessions; the decision making must remain real. Because of the current economic situation, space travel is by no means all that much a matter of course any more." A message which was quite clear in late November 1983, but since then the Netherlands has become a good deal better off macro-economically speaking. On the other hand, there is the fact that for now only a few large companies in the Netherlands, with Fokker in the lead, are benefitting from space travel. That is a narrow base, in addition to which the airplane division of Fokker has always found a willing ear for credits at the EZ and will continue to do so. Seen in that light, an extra effort for aerospace, whereby Fokker would benefit directly and the most, could well mean overplaying their hand. They also know that in the aerospace division, of course, but even there the rule is: you have no, you can get to yes.

8463
CSO: 3698/536

BRIEFS

NEW ESA PRESIDENT--The [European Space Agency] Council elected as its new president Mr Harry Atkinson (Great Britain) to succeed Hubert Curien, who is not eligible to succeed himself. The nomination of Mr Atkinson, director of the Astronomy, Space and Radio and Nuclear Physics Division of the British Science Engineering Research Council, solidifies the council's recognition of a new orientation in the British attitude toward European space policy, characterized by the country's industrial companies' brand new interest in participation in programs other than those of satellites for specific applications. [Excerpt] [Paris AFP SCIENCES in French 28 Jun 84 p 21] 12666

CSO: 3698/517

CHAIRMAN OF VW IN FRG ON MODELS, MARKETS, MANAGEMENT

Munich INDUSTRIEMAGAZIN in German May 84 pp 103-104, 107-108, 110

[Interview with Carl H. Hahn, chairman of the board of the Wolfsburg Volkswagen Company, by INDUSTRIEMAGAZIN: "'We Are on the Right Road'"; date and place not specified]

[Excerpts] INDUSTRIEMAGAZIN: When you returned Dr Hahn to VW 2.5 years ago the company was plunging downhill. After years of dropping sales VW in 1982 and 1983 has had to accept heavy losses. In the past year Volkswagen has lost shares of the domestic market and your foreign markets have left you with a deficit of billions. Nevertheless, you are glowing with optimism and you even speak of the turnaround at VW. What actually is the reason for your confidence?

Hahn: The VW Company does have difficult years behind it just as all large automobile companies throughout the world have difficult years behind them, especially the Americans and all our European competitors, when we speak of the large mass producers of automobiles. Nevertheless, in its total financial accomplishment in the past 5 years VW has no reason to hide its head. Latin America--and you have referred to the problems of our subsidiary there--is not a VW problem but is a Latin American problem.

INDUSTRIEMAGAZIN: But where do you get your repeatedly demonstrated confidence? Latin America still remains an enormous risk factor.

Hahn: We can manage this risk. In the course of a 5-billion investment program in 1983 the VW Company achieved the highest cash flow of its history and its liquid funds have been boosted to over 1 billion marks.

INDUSTRIEMAGAZIN: Does your confidence mean perhaps that you expect to close your books in the black in 1984?

Hahn: As you know we are living in a world in which so many dramatic events, so many extreme events can hail down upon you on even the loveliest summer day that I would prefer not to make any prognoses for 1984 prior to 31 December. We can only say that on the basis of developments in the fourth quartal of 1983 and in the first quartal of 1984 we see a change.

INDUSTRIEMAGAZIN: Even though the risks continue abroad, even though your subsidiary Triumph-Adler despite all efforts still has difficult problems and even though your show horse the Audi which last year still achieved a plus of almost 35 percent domestically has nevertheless taken a bad fall in the two first months of this year in the FRG? The Audi market share has dropped from 7.5 to 5.6 percent.

Hahn: In 1983 Triumph-Adler went entirely according to plan and will continue to do so in 1984. Sales and market share of the VW company domestically have risen in the first months of this year in comparison with last year. As for the Audi, considered in isolation, you are evidently dealing with a technical reaction designed to seal off the effects of the big American success.

INDUSTRIEMAGAZIN: And your new LT transporter must be giving you some worries. You're building only 100 of them per day and in addition you've developed for them a special water-cooled boxer engine. But that is terribly expensive.

Hahn: We have been able in recent months to increase the sale of our LT models by 24 percent as compared with last year and in so doing we've gained shares of the market. The LT is making us relatively happy insofar as that is possible at all in today's commercial vehicle business. Besides, the water-cooled boxer engine was not developed for the LT but for the VW transporter. We are building daily around 550 transporters and that helps us to stabilize employment in the Hanover plant. This has manifested itself not least of all in the reduction or in some cases the complete elimination of reduced-time shifts in the Hanover plant. Also the sales figures for the VW transporter in the United States has been gratifying in recent months. And also these sales have been a good indication that a turnaround will follow a number of measures which we have taken in the production and marketing areas.

INDUSTRIEMAGAZIN: TA, Audi and the transporter plant may be merely transient problems, but you have nevertheless serious structural worries too. The new Golf and its stepped-rear sister, the Jetta, are the only products which are achieving acceptable production figures for VW and which are earning the money that you need to really "make it" in Latin America.

Hahn: No. Just because the new Golf has again become a worldwide success we are not necessarily becoming the Golf company. Nevertheless, the fact cannot be ignored that the market potential in the medium price range, which is the price range of the Golf, has very sharply increased in recent years.

INDUSTRIEMAGAZIN: You are speaking of turnover; we are talking about profits.

Hahn: We are also making money with our other models even though these earnings may differ depending upon the price range of the model. But that simply corresponds to the structure of the worldwide field of competition. In addition the Passat and the Polo are in their market range the leading cars on the German market.

INDUSTRIEMAGAZIN: With the Polo you have to run up against competition which just on the basis of their much larger home markets in this price class have very different production figures and much lower costs in comparison with VW. On top of that Fiat and Renault, for example, are producing with distinctly lower wage costs. In that respect your market leadership in Germany is not of much use to you; it's hard for you to hold the line.

Hahn: That is partly correct because actually we did not have protected home markets as our French and Italian neighbors have had.

INDUSTRIEMAGAZIN: As of this summer you have been having the Polo and also a few Passats and Santanas produced at Seat in Spain. For cost reasons?

Hahn: Also for cost reasons. However, the more important fact for us is that we are opening up a new market and servicing this market through an already existing network of dealerships and we have created a production base for VW and Audi.

INDUSTRIEMAGAZIN: What sort of production figures are you thinking of there?

Hahn: This year in Spain we shall manufacture about 30,000 Polos. Next year it might be 90,000. In addition there will be about 35,000 Passats.

INDUSTRIEMAGAZIN: How much cheaper will the Polo be in Spain?

Hahn: That I can't say; nevertheless, we have had many reasons for going to Spain.

INDUSTRIEMAGAZIN: That is easy to believe, but then why don't you shift the entire Polo production to Spain? Or are you planning to do that?

Hahn: No, we're collecting experience with our new partners and getting to know one another. To speak of further steps would be logically premature. Right now our cooperation is in the warmup stage.

INDUSTRIEMAGAZIN: In the Polo price class you can succeed over the long term only if you produce at the same costs as your competitors do abroad. You must have to reckon with the effects of plant location.

Hahn: Naturally. Our new assembly hall 54 ...

INDUSTRIEMAGAZIN: ... where VW is making the Golf ...

Hahn: ... just shows how one can solve such problems if one uses imaginative engineering.

INDUSTRIEMAGAZIN: You are still producing the Polo variant called the "Derby" at a production rate of 100 per day. That is not much if you consider that you are able to produce 3,000 new Golfs daily. Why do you continue to drag the "Derby" along?

Hahn: Polo and "Derby" are a family of models and when you're assembling by hand or by means of robots it is a matter of indifference whether you are assembling a stepped-rear or a steep-rear variant. The new manufacturing technologies allow us the necessary flexibility.

INDUSTRIEMAGAZIN: Your second big item is the Passat. But with this car you are also earning no money, neither domestically nor abroad.

Hahn: A distinct contradiction.

INDUSTRIEMAGAZIN: Let's take, for example, your American competitor, General Motors, and its German and British subsidiaries. Last year they assembled a good 300,000 of the Ascona which is the Passat's competitor. Volkswagen assembled only 220,000 Passats and an additional 57,000 of its derivative the Santana.

Hahn: You must also include the Audi 80 for us and then you'll come to a figure of more than 400,000 cars coming out of a single basic structure. We also have an excellent chassis speaking for us and an excellent mechanical structure and the various body variants.

INDUSTRIEMAGAZIN: But VW is building its cars in various locations affected by corresponding cost disadvantages. And secondly, this way of adding will no longer hold in the future because the new Audi 80 deviates sharply from the Passat in consequence of your two-product policy.

Hahn: In the engine assembly plant we have a capacity of 1,000 cars a day. In Ingolstadt we are building about 1,200 cars a day. Those are orders of magnitude for assembly which are recognized throughout the world as optimal figures.

INDUSTRIEMAGAZIN: That may be true now. But Emden is not an ultramodern plant. And for this reason, too, you have cost disadvantages.

Hahn: Take a look at the engine plant. In the last few years we have invested hundreds of millions of marks there and have made Emden into one of the most modern assembly plants in Europe.

INDUSTRIEMAGAZIN: Dr Hahn, your model program is teeming with numberless variants. You are offering about 250 variants of the Golf alone. Does that really pay?

Hahn: Segmentation of the product line is a characteristic of competition in the worldwide automobile industry. The high number of variants is a consequence of the different forms of legislation in Europe and overseas with respect to safety and exhaust regulations. In order to make a showing in many markets we are compelled to meet these various specifications. And then there is also technological innovation which naturally increases the multiplicity of variants. When, for example, we equip the Audi 80 with permanent four-wheel drive then there is an abrupt increase in the number of its variants.

INDUSTRIEMAGAZIN: With a turnover of about 40 billion marks you had a loss of a couple of hundred million. But you yourself consider that with such a turnover volume you should have a profit of at least 1 billion marks, as you have repeatedly stated. Then how are you going to close this gap? Won't you have to first clearly define what VW actually is and what it ought to be? In virtue of its "bug" tradition VW is a mass manufacturer and as such should have a corresponding philosophy, especially with regard to costs. Thus, for example, it should be the ambition of VW, in those price classes where it is represented, to always produce at the lowest cost. Instead of that in your Golf "Carat" costing 23,000 marks you are rubbing shoulders with Mercedes.

In the upper range of your widespread program you are competing with BMW and Daimler. You will never be able to establish an image in competition with theirs. In the lower range you are competing with Italians, French and Japanese and against them you will never make it in terms of cost. None of that fits together. What actually is your philosophy, what is the mission of VW?

Hahn: To reply to your last point first: We are producing automobiles far more profitably than several of those of our European competitors whom you have adduced as examples. With regard to our philosophy, we have a clear division of labor between VW and Audi. Audi is aimed at the market for sporty impressive automobiles above the traditional VW segment and Audi documents its technological superiority very convincingly. This is proven also by the growth rates of Audi sales in the United States and Japan, which are very difficult markets. Also the financial results are beginning to reach the right orders of magnitude. With its new generation of models, with compact construction and transverse front-end engines Volkswagen has set the standard for economical and comfortable vehicles. We have once again become the standard and market leader in many markets of the world. In these markets the VW models have never claimed to be cheap or primitive, but have always been functionally and technologically high-value automobiles. Therefore it makes sense for us to round off our production upward with a Golf in its highest "Carat" version and with a Passat "Carat" and the VW bus in "Carat" version in order to meet the expectations of an exclusive level of buyers who identify with VW. You can be certain that we are on the right road toward putting ourselves in a position to combine the VW mission with the profits that will be necessary for a secure future.

INDUSTRIEMAGAZIN: You keep emphasizing, Mr Hahn, that your bookkeeping in past years has been overshadowed by Latin America and that basically VW is a profitable company. But it evidently is not profitable enough. And the risks in foreign countries will continue to stay with you in the future.

Hahn: There we have a lot of catching up to do. And therefore we are improving very rapidly our Latin American structure. I consider that it has been a great accomplishment that VW do Brasil has been able to reduce costs in parallel with the cutback in production necessitated by market conditions. In North America we have created a turnaround of the order of magnitude of $200 million.

INDUSTRIEMAGAZIN: Thanks to the monetary exchange rate.

Hahn: No. Primarily it has been the restructuring which has been effective, in sales, in product line, in personnel. And we have sold our second plant, Sterling Heights.

INDUSTRIEMAGAZIN: For which you had at first paid out $300 million.

Hahn: In that sale we did not have a loss.

INDUSTRIEMAGAZIN: Now your remaining plant, Westmoreland, is being at the present time only 50 percent utilized. The new Golf which is supposed to be manufactured over there after the fall would in other words have to sell twice as well as the old one if this situation is to change. How quickly will that come about?

Hahn: We are waiting for the entrance of the new Golf into the market in the United States. Public interest in the new Golf is already very great in the United States.

INDUSTRIEMAGAZIN: But can the car really do it? You wanted to win over Chrysler to building a Chrysler on the basis of the new Golf. This was in order to better utilize Westmoreland. Chrysler is said to have rejected your proposal with the argument that Golf might turn out to be nothing in the United States.

Hahn: That is not the case. Chrysler has other plans.

INDUSTRIEMAGAZIN: But it is known that the Golf was designed entirely with a view to assembling it by the highly automated production in the Wolfsburg Building 54. If you assemble it in the United States under other conditions of manufacturing technology then it will certainly be much more expensive.

Hahn: We are going to use robots from Germany for the first time in Westmoreland for the new Golf, in other words we're going to mechanize more intensively than before.

INDUSTRIEMAGAZIN: But not to the same extent as in Wolfsburg.

Hahn: No, that would be uneconomical. But I remind you that the Americans and the Japanese are the people who have the statistically longest hours of work. This results in a different set of economic assumptions.

INDUSTRIEMAGAZIN: And so you are not afraid that the Golf will be too expensive?

Hahn: Definitely not. However, in the United States as everyone knows it is hard to make money with cars in the Golf price class. But the conditions are good for the Golf itself in Westmoreland. We are at the moment very satisfied with the preliminary phase of our product. So we shall produce the car there just as well as in Wolfsburg. And in addition the situation in the United States has very much improved for us in other respects. There the Audi has since December had the best sales of any luxury car. Last year we

sold 47,000 Audis. This year it could be more than 60,000. Also the VW import figures have risen more steeply than the overall market.

INDUSTRIEMAGAZIN: In addition to the risks abroad, personnel costs harbor substantial problems for VW as compared with competitors. Just as a consequence of fringe benefits which are a special feature of VW you have to come up with 800 million marks more. And in wage costs you are 15 to 18 percent worse off than comparable competitors.

Hahn: I don't want to go into numbers. Nevertheless, we are comparable with our most important competitors.

INDUSTRIEMAGAZIN: As everyone knows VW has an unusually strong "workers' council" and has also definite relations with the IG Metals Union. Are you able to do anything decisive at all with regard to wage costs?

Hahn: We have a firm grip on wage costs. They didn't increase any more in 1983. And in the last 2 years worldwide we have reduced our personnel inventory from 247,000 to about 230,000.

INDUSTRIEMAGAZIN: This reduction took place in Brazil and in the United States. What are you doing in your plants domestically, where are you reducing personnel there?

Hahn: In the indirect area. In particular through early retirements. Besides, if you examine our loss computations for the business year 1983 you will see that personnel costs in the company have not risen. Our structural measures are beginning to take hold.

INDUSTRIEMAGAZIN: If you were to succeed in halving the run-through time of a contract from today's average figure of 33 days then you would open up a really rewarding potential would you not?

Hahn: Naturally. We are working on that now. My colleague Horst Muenzner and I have found an organizational form ...

INDUSTRIEMAGAZIN: Really?

Hahn: ... and set up a configuration in which we combine all areas ranging from the purchasing instructions to the delivery. In this way we are bridging over the functional boundaries. Because every organizational structure is a living thing and is in process of further development. We are working on the shortening of order cycles and delivery cycles in order to reduce inventories. This process has commenced but will still take several years. On this route a lot has already been done in the form of a mixture of scientific management and pragmatics.

INDUSTRIEMAGAZIN: Is it possible for your progress here to be expressed already in terms of entire days of reduced run-through time?

Hahn: That is too early. But last year we have already significantly reduced average inventories in the concern. The next steps will then be much, much more difficult because they necessitate large data-processing systems and the active reliable cooperation of our suppliers.

INDUSTRIEMAGAZIN: What can you accomplish in the way of shortening development times?

Hahn: With CAD/CAM we can certainly reduce this time from today's 6 years substantially below 5 years. But this does not make anything cheaper. The cars are on the way toward becoming more complex. Finally, we are coming to require that a car on the very first day of its production shall roll off the assembly line in as good a quality as that of its predecessor model on its last day.

INDUSTRIEMAGAZIN: Then where are there any large savings possibilities?

Hahn: Everywhere.

INDUSTRIEMAGAZIN: Also in intercompany cooperation?

Hahn: I have yet to meet anyone who has developed large savings potential from cooperations. These have mostly a peripheral character. Our most important potentials lie in the advance of technology. We must offer cars which can be sold, which fully utilize our capacities and which bring us profit. For this purpose we must also open up new markets.

INDUSTRIEMAGAZIN: Then where are you going to find new markets?

Hahn: In Europe we have filled up the largest and most important gap which yet remained for us; that is in Spain. In the next 20 years the OECD countries will also be a focus of our attention. Six hundred million people with great purchasing power will also buy about 80 percent of all passenger cars in the future. For this reason we must be present and strong in these countries; that is a focal point. In addition Latin America is a natural focal point because there we have a clear role as market leader and we have responsibility. Latin America is the market where there is again going to be growth. An area where even today over a million automobiles are produced and sold between Mexico and Argentina.

INDUSTRIEMAGAZIN: In the Pacific Asiatic area Volkswagen is only weakly represented. Don't you attach any value to these future markets?

Hahn: Should we concentrate on areas where the prices are worst and the competition is the hardest, on areas which are split up into a multitude, which are geographically the most remote markets from us or should we concentrate where there is really something to be gained? Setting priorities also means being selective.

INDUSTRIEMAGAZIN: Does that mean that you can only make sales in Europe where the Japanese in part because of restrictions are unable to sell or can

sell only with limitations, because the Europeans are willing to pay a quality bonus of 3, 5 or 7 percent?

Hahn: No, because through Nissan, our Santana production anchor, we have again seized a pioneering role in the Asiatic area and in addition Europe, North and South America and our anchor points in Africa represent more than enough potential for our future.

8008
CSO: 3698/516

TECHNICAL DETAILS ON PEUGEOT ELECTRIC CAR

Paris ELECTRONIQUE ACTUALITIES in French 29 Jun 84 p 26

[Article by J.A. Bossard: "The New Electric Peugeot 205"]

[Excerpts] The new electric-powered Peugeot 205 has recently been shown to the technical press. Two samples of this prototype vehicle have been produced under the sponsorship of the Research and Scientific Affairs Division (DRAS) of Peugeot in cooperation with AFME [French Energy Control Agency].

The new 205 has 300 kg of nickel-iron batteries from SAFT [Fixed Batteries and Tractions Company] which are located entirely under the hood for safety reasons and to leave the trunk free. Beneath the batteries is an 8 kilowatt motor capable of peaks of 17.5 kilowatts, coupled to a reduction gear which powers the drive wheels. This motor is controlled under 72 volts by a rotary switch with asymmetric thyristors for the first third of its speed range and by a transistorized excitation switch for the higher speeds. A traditional accelerator pedal determines the speed, and removal of the foot from the pedal results in motor braking with recovery of as much as 30% of the stored energy. The second pedal is a traditional mechanical brake. There is no gear box since the developers wanted to make a clean break with current systems. A small reversing swich selects forward or reverse movement. Maximum speed is 100 km per hour, and, with a cruising speed of 70 km per hour, the car's range is 140 km. The passenger and luggage capacity is not changed (300 kg), and a 10-hour recharge is necessary between cycles, which, with careful calculation, puts the Cote d'Azur at a distance of 8 days from Paris.

The possible market would be those needing only a limited range and having a fixed garage for recharges. This might include short distance deliveries, doctors and emergency road service. The cost of operation is an attractive Fr 7 per 100 km, but the purchase price will most certainly be higher than that of the diesel even with long-term production.

There are still many problems to be solved. The car is very heavy in front (motor and batteries, 374 kg instead of 160 to 180 kg for internal combustion models) since the SAFT battery, which shows great improvement and reduces the mass by half compared to lead, is still heavy and cumbersome.

Other solutions are being considered, but only at the laboratory level, either because they entail totally prohibitive prices or because they are not yet operational.

At any rate, according to Peugeot, it will be 12 to 18 months before preproduction, with limited commercial production beginning in 3 to 5 years. This is, frankly, a use test while awaiting improvements from suppliers. Anyway, for now, the heating system is, ironically, diesel. Much work remains to be done, but this is a useful effort worthy of recognition.

12666
CSO: 3698/517

FINNISH COOPERATION IN BIOTECHNICAL RESEARCH

Helsinki HELSINGIN SANOMAT in Finnish 28 Apr 84 p 2

[Article by Mikko Niemi, professor of anatomy at Turku University and official representative of Finland at the European Molecular Biology Conference (EMBC), and Olli Makela, professor of bacteriology and serology at Helsinki University and chairman of the Academy of Finland's EMBC Committee: "Finland Is Getting a Partner in European Cellular Biology Cooperation"]

[Text] In the 1970's Finnish cellular research investigator Kai Simons resigned from his professor's post at Helsinki University to move permanently to the European Molecular Biology Laboratory (EMBL) located in Heidelberg. The event raised somewhat of a stir, in which many even earlier published arguments about the bright and shady sides of the internationalization of science were repeated.

People bemoaned the brain drain: Once again a gifted young researcher "was lost" to international projects. They lamented the poor research conditions in our university institutes, since they cannot compete with the world's leading laboratories.

Science is international and Finland is a member of the international scientific community. Viewed from this background, our researchers' moving about the world and even permanent establishment at foreign centers are natural occurrences. With Simons' aid it was later possible for many another Finnish scholar to have contacts with the foremost people in his field faster and better than if his mentor had stayed in Helsinki.

An Expensive Business

Without assuming a position in this matter on our universities' resources, we may say that molecular biology is such an expensive business that not even governments wealthier than ours can provide full-scale funding. This is precisely why 10 years ago 10 European countries decided to found a common laboratory in Heidelberg.

Finland has only slowly gotten interested in joint molecular biology activities in Europe. The European Molecular Biology Organization (EMBO) has, however, gradually become known to Finns. Several of our leading scientists in that field have over the years been invited to join this central organization of scientists working in that field.

The organization annually distributes grants and organizes scientific symposiums and methodology workshops. It has probably become most widely known through the EMBO JOURNAL, a high-level scientific journal founded last year.

The funding of activities is based on an agreement between 17 European governments which the EMBC takes care of. Finland has participated in this activity since 1974. Expenses are distributed according to the national products of the member nations. Finland's share is just under 2 percent, or about 300,000 markkas a year — an extremely modest sum in view of the direct benefit it affords us. A total of 46 Finnish scholars were able to engage in postgraduate study via this channel between 1977 and 1983.

During the same period the EMBC funded the stays of 22 foreign scholars in Finnish laboratories; 12 of them worked here for at least a year. The EMBO naturally favors the European countries in its exchanges of scholars, but no more limits the selection of grant recipients than it does objects of study to only those countries that are members of the organization.

At the Pinnacle of Science

In 1974 10 European nations founded the EMBL, independent of the EMBO, in Heidelberg. The purpose was to bring together intellectual and material resources so that at least one center would come into being on this side of the Atlantic that would be capable of competing on an equal footing with U.S. research in molecular biology, which was even then advancing at a frantic pace.

The EMBL has its own modern buildings at Heidelberg and two remote stations: a source of synchronotron radiation in Hamburg and a source of neutrons in Grenoble. Over the years it has been really demonstrated that molecular biology can also be successfully advanced without heavy biophysical instrumentation.

It has also become apparent that not a single European country would have been capable of producing an intellectual "critical mass" like this in so short a time, as a result of which the Heidelberg laboratory has with its research projects risen to become one of the few noble installations among the world's leading centers.

Overcautious Finland

Finland's attitude toward European cooperation has been constantly cautious and expectant. It took 6 years for us to become a member of the EMBC. Finland is still not a member of the laboratory. The discipline's scholars largely agree that joining the EMBO scholarship program 10 years ago was a wise decision. The strong development of biotechnology and the breakthrough in our country in the 1980's may be regarded as one indication of its farsightedness.

Without the EMBO and the opportunities for postgraduate study it has channeled, it would scarcely have been possible to train even the small number of molecular biologists who are at present responsible for the industrial development of the field here in Finland. It is obvious that a just now budding industry will in the next few years require so many researchers familiar with combination

DNA technology, for example, that not even EMBO's services will meet the demand.

Since we know that the alternative training site, the United States, has reduced Europeans' opportunities for postgraduate study, our country's representatives in the EMBC should do everything they can to see to it that young Finnish bioscientists' opportunities are expanded.

The same slowness and caution that were obstacles to our joining the scholarship program still seem to be interfering with our joining the EMBL. We have gotten into a paradoxical situation: Although Finland is not a member of the laboratory, Finnish researchers are conspicuously often on its payroll. Cell memberane investigator K. Simons is the laboratory's only tenured research professor!

Membership Is Important

How is this possible? At the pinnacle of science, the laboratory has, of course, recruited its researchers from among Europe's best. Since Finland has had particularly capable researchers to offer, it has not been hard for them to get appointments.

Perhaps we may now ask whether we can go on like this even in the future? In our opinion, no. First of all, Finland simply does not have the moral right to benefit from the advantages of the common laboratory without participating in its support. Secondly, in the event of a tightening of the economic climate the laboratory may have to more and more select its personnel only from among its member nations. (The chief funders: England, the Federal Republic of Germany and France, have already made bitter-toned observations in that direction.)

Probably the most important reason, however, is that the EMBL has developed a particularly essential training site. The laboratory's sizable scientific postgraduate study program has been in operation for several years now and several Finns as well have had an opportunity to benefit from it.

The training of doctors was recently begun as a new activity. They plan to accept from 8 to 10 young scholars a year at the institute to be trained as doctors of molecular biology over a 3-year period. The EMBL will conclude an agreement with the appropriate national university to the effect that, once the training is completed, the dissertation may be presented for examination at the student's "own" university.

Heidelberg has also essentially evolved as a repository of different kinds of technology-intensive method courses. The laboratory's excellent facilities have thus fertilized research in many countries. Let us especially mention research on the structure of biological macromolecules, in which field national equipment and facilities as aar as any European country is concerned are scarcely so highly developed that researchers would not have to resort to the EMBL and its accessory stations for aid in terms of equipment in the field of biophysics.

Valuable Data Bank

Another important block of EMBL activities is useful from the standpoint of both our researchers and industry. We are referring to the gene (data) bank. Perhaps the hottest subfield of microbiology is at present the localization of cell products into their hereditary elements, genes. Work on this has just begun, but the industrial applications of gene-transfer technology and gene therapy will in time be founded on the enormous capital produced by basic research.

Since a genome contains nucleic acids and bases in a given sequence, an especially large number of information spores have to be stored in each gene as a base sequence. It is now beginning to be impossible for an individual researcher or research institute to control all the date on genes that has so far been accumulated. In the United States the problem has been solved by commercializing the whole operation: A researcher obtains comparative data at data banks only when he pays for it.

The EMBL is now creating an information service on a noncommercial basis in Europe which is freely available to researchers. For example, every biotechnical production process requires the constant maintenance of contact with the data base in which all the information to date is accumulated as a gene library. Both Finnish research in molecular biology and the filld's growing industry will benefit because of this in many ways from the Heidelberg data bank.

During the past few years Finnish bioscientific research has to an increasing extent directed its contacts toward the United States. In medicine, for example, most of the active professors have now obtained their postgraduate training (only) on the other side of the Atlantic. Aside from the high standard of American science, this is also due to the fact that there are only scanty channels for cooperation and funding in scientific exchanges inside Europe.

Given this situation it would be particularly difficult for Finland to develop new scientific contacts and strengthen former ones with the European countries. You see, this one-sided American-directed postgraduate training may in the long run skew the direction research is moving in and it threatens to only lead to a one-way exchange of information and researchers.

Power of Cooperation

The EMBO is an excellent example of a European organization that has with little expenditure succeeded in rousing interest in the exchange of scholars and the results of research in Europe. As for the EMBL, it is creating a superstructure to support its activities. It offers top training and also promotes itself as a center for methods, research facilities and the best information, a center without which not a single European country would be likely to in the long run be able to develop high-level research in molecular biology.

Under the direction of its new director, Swede Lennart Philipson, the EMBL has already become a model example of how profitable cooperation in scientific endeavors among the European countries is. It does not stifle national science; rather it creates indispensable support for it.

Finland cannot afford to withdraw from development. Our share of the funding would only be 1.6 percent of the laboratory's expenses (about 1.2 million markkas a year), which is a very modest contribution in view of the benefit we would obtain from it. This is why our country ought to quickly become a member of the Heidelberg laboratory.

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CSO: 3698/459

NEW FOKKER AIRCRAFT PROJECTS GET UNDER WAY

Swiss Order

The Hague ANP NEWS BULLETIN in English 7 Jul 84 pp 6-7

[Text]

S c h i p h o l, July 6 - Fokker Aircraft Works executives, buoyed by a 500-million-guilder launching order for their new F-100 aircraft, today voiced optimism about the future of Holland's only aircraft company.

Executive Board Chairman Frans Swarttouw told newsmen he expected further orders for the F-100 this year as well as a launching order for the company's new F-50.

Fokker would soon receive a delegation from the American airline U.S. Air while talks were also being held with KLM, Royal Dutch Airlines, and Scandinavian Air Systems (SAS), executives said.

Fokker spent eight months and 500,000 guilders to secure the all important launching order for the F-100 from Swissair. The order was won in competition with giant U.S. aircraft maker, Boeing.

Executives said they were pleased that a major airline such as Swissair had become the first customer for the F-100 as this would probably make subsequent sales easier.

But they added that Fokker and British engine-builder Rolls Royce made substantial price concessions to Swissair. Future customers would pay a higher price, they said.

Govt. Aid

The F-100 is a short and medium haul 107-seat jet-liner powered by two Rolls Royce Tay jet engines. The F-50 is a short haul 50-seat prop-jet, powered by two Pratt and Whitney engines.

Swissair has ordered eight F-100s, modified to carry only 84 passengers, for delivery in 1987 and has taken an option on six more.

Fokker, which recently had to dismiss workers because of slackness, says it expects the Swissair order to boost employment.

At present it is on the lookout for technical and design staff, but in a year's time production staff will also be needed. Former Fokker employees will get first bite of the apple, the company has promised.

In April Fokker reported a 1983 net profit of 18 million guilders on turnover of 1.53 billion guilders compared to a 1982 net loss of 10 million guilders on turnover of 1.35 billion guilders.

Earlier this year the Dutch government approved some 800 million guilders in financial aid for development of the F-100 and F-50.

Japanese Subcontractor

The Hague ANP NEWS BULLETIN in English 11 Jul 84 p 6

[Text]

S c h i p h o l, July 10 - Fokker aircraft said today that it has signed a contract with the Japanese firm Fuji for supply of tail parts for its new F-50 turboprop aircraft.

Fuji will deliver the first parts to Fokker in April next year.

The first flight of the 50-passenger airliner, the successor of the F-27, will take place at the end of 1985, and the aircraft should be on offer to airlines from mid-1986.

CSO: 3698/567

BRIEFS

AIRBUS TALKS WITH U.S. FIRM--Tsp. Toulouse. A delegation of experts from the American airline PanAm is at the moment negotiating in Toulouse with the European Airbus Industry regarding extension of the use of the "Airbus" to Berlin routes. Several weeks ago Acker, chairman of the board of PanAm, held conversations with politicians and scientists as well as with Airbus Industry. PanAm is interested in around a dozen airbuses of the type "A 300" which are sitting "on the hill" in Toulouse because thus far no buyers have been found. According to reliable reports if a contract is signed PanAm will start off by taking eight "A 300's." According to PanAm plans the giant passenger aircraft will be leased from Airbus Industry. Presumably then about half of them will be used in Berlin traffic and the other aircraft would be used in the United States. The airbuses assigned to the Berlin fleet would fly on the main routes where there is the greatest passenger demand while the other Berlin routes would continue to be flow by the Boeing 737-200. It has also been learned from Berlin aeronautical circles that studies have already been commenced at the Tegel Airport with regard to the question of just how the airbuses shall be dispatched. A principal problem would be the size of the waiting rooms. Depending upon the arrangement of seats, an "A 300" can accommodate between 200 and 250 passengers. A speaker for the German representatives of PanAm yesterday declined to comment on the "Airbus" plans. [Text] [West Berlin TAGESSPIEGEL in German 10 Jul 84 p 1] 8008

CSO: 3698/529

COMPUTERS

EEC MAY INSTITUTE PROCEEDINGS AGAINST IBM FOR ABUSES

Paris ELECTRONIQUE ACTUALITES in French 22 Jun 84 p 7

[Unsigned article]

[Text] The European Economic Community is currently carrying out discussions with IBM to obtain that the manufacturer publish the specifications of its large computer interfaces no more than two months after the introduction of its new models.

But while negotiations continue, the EEC does not exclude the possibility of instituting proceedings against the company, by the end of June, for abuse of leadership position.

On the other hand, IBM is standing by the position already expressed by Mr Opel, president of the company, during a trip to London several weeks ago, and to American shareholders in a statement made in Florida. Mr Katzenbach, IBM's vice-president for legal affairs, has indeed confirmed in New York that the company "is opposed to any demand from the EEC for the publication of interface specifications, as a matter of principle."

During his statement in London, Mr Opel had in fact already brought the debate into broader territory, by declaring that an action such as the one intended by the EEC, "runs the risk of being launched against the leader of any industry, notably in industries that greatly depend on technical innovation."

The company, which presently discloses the specifications of its interfaces two years after the introduction of a new model (which does not give other manufacturers the time to adapt their equipment), considers that EEC's demands threaten its industrial secrets.

These demands concern systems with the 370 architecture, and particularly the most recent of these computers, the 303X, 308X, 308XX, and 43XX.

In turn, the EEC bases its demands on IBM's very strong position on the European market, which covers 50 percent of the number of intermediate and high power mainframes in Europe, but probably a much higher percentage in value, and 90 percent of the compatible equipment market.

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CSO: 3698/525

EXPERT SYSTEMS BEING DEVELOPED AT FRENCH UNIVERSITIES, FIRMS

Paris ZERO UN INFORMATIQUE HEBDO in French 25 Jun 84 pp 48-49

[Article by Edouard Launet: "Artificial Intelligence in Avignon: Inference Motors Looking for Expertise"]

> [Excerpts] The French school is five years behind the United States. But the Fourth Symposium on Expert Systems organized by the ADI [Data Processing Agency] is encouraging.

Status of expert systems in France:

"We must note that we are five years behind the United States. The French school, impelled by the strong industrial demand for expert systems, tends to distinguish itself by its concern for rigor. That may be our chance, for all those involved are convinced that it is important to study fundamental methodologies: consistency management, metarules, etc."

"It is essential to encourage this trend and support projects allying methodological reflection and the realization of effective expert systems."

After all, five years is not a lot. Actually, these few lines taken from the Sico Club report on artificial intelligence seem almost optimistic, considering the endemic lack of financial and material means from which research in this field is suffering.

The Symposium on Expert Systems organized by the ADI last May in Avignon provided a unique opportunity to feel the pulse of the patient. The 300 experts (40 percent from the industry, the rest from universities and research centers) who met under the vaults of the Popes' Palace blithely signed its release from the hospital.

The best shots in the game that opposes Lisp and Prolog were commented at length, specialized artificial-intelligence machines reviewed in detail, and the tools used to develop expert systems taken apart.

Some Expert Systems Shown at the ADI Symposium

Name:	Cessol
Application Range:	Expert system for the definition of geotechnical ground exploration campaigns (prior to the construction of a building). Designed to be used by prime contractors and engineering companies.
Language:	Pascal
Inference Engine:	-
Knowledge Representation:	-
Hardware Environment:	Symag 2000
State of Completion:	Prototype
Authors	University of Savoy and Symag Data Processing

Name:	Dip Meter Advisor
Application Range:	Expert system for geologic interpretation.
Language:	Lisp
Inference Engine:	Forward chaining
Knowledge Representation:	Production rules
Hardware Environment:	Xerox 1108
State of Completion:	Prototype
Authors:	Schlumberger
Remarks:	Soon to be introduced at various sites.

Name:	Dip Meter Advisor
Application Range:	Expert control system for PWR [pressurized-water reactor] nuclear power plants.
Language:	-
Inference Engine:	Alouette motor (forward chaining and full saturation; first-order logic computations possible)
Knowledge Representation:	Production rules
Hardware Environment:	-
State of Completion:	Prototype
Authors:	EDF [French Electricity Company]

Name:	Dip Meter Advisor
Application Range:	Expert failure-diagnostic system for a fast-neutron nuclear reactor.
Languages:	Prolog, Pascal
Inference Engine:	-
Knowledge Representation:	-
Hardware Environment:	Vax 11/780
State of Completion:	Design stage
Authors:	AMEDIA (Mediterranean Association for the Development of Artificial Intelligence)
Remarks:	Basic version operational by September 1984. Eventually, real-time operation at the Super-Phenix 1 power-plant.

Name:	Pascop
Application Range:	Expert system providing assistance in the determination of synthesis pathways in organic chemistry. Retro-synthetic approach.
Languages:	Alchem, Fortran V
Inference Engine:	-
Knowledge Representation:	-
Hardware Environment:	Univac 1100 (+ Tektronix 41XX)
State of Completion:	Operational
Authors:	Louis-Pasteur University in Strasbourg
Remarks:	Interactive program using graphic communication interfaces.

Name:	Psycho
Application Range:	Expert system providing assistance in the determination of synthesis pathways. Synthetic approach.
Languages:	Class, Fortran 77
Inference Engine:	-
Knowledge Representation:	-
Hardware Environment:	Univac 1110 (+ Tektronix 41XX)
State of Completion:	Prototype
Authors:	Louis-Pasteur University in Strasbourg
Remarks:	Interactive program using graphic communication interfaces.

Name:	Sonex
Application Range:	Expert reading system for voice records (voice recognition).
Language:	Interlisp
Inference Engine:	Forward chaining with variables and negation
Knowledge Representation:	Production rules
Hardware Environment:	-
State of Completion:	Design stage
Authors:	LIMSII [Data-Processing Laboratory for Mechanics and the Engineering Sciences] in Orsay.

Name:	Pegase
Application Range:	Expert financial system (credit-application and investment analysis, etc.)
Language:	Micro-Prolog
Inference Engine:	-
Knowledge Representation:	Production rules
Hardware Environment:	IBM-PC, Victor-S1
State of Completion:	Prototype
Authors:	University of Lausanne (Federal Polytechnic School)

Name:	Tom
Application Range:	Expert system for the diseases and cultivation accidents encountered in tomato-growing.
Language:	Interlisp
Inference Engine:	Emycin
Knowledge Representation:	Production rules
Hardware Environment:	DEC 20
State of Completion:	Prototype
Authors:	Cognitech INRA [National Institute for Agronomic Research]
Remarks:	"Natural-language" interface. Planned extension to other crops.

Name:	Satin
Application Range:	Expert system for transfers and innovation (legal, economic, documentary, scientific appraisals, etc.).
Language:	Maclisp
Inference Engine:	Forward, backward and mixed chaining
Knowledge Representation:	Production rules
Hardware Environment:	DPS 8
State of Completion:	Design stage
Authors:	Paul-Sabatier University in Toulouse
Remarks:	Multi-expert system coordinated by a supervisor.

Name:	Copest
Application Range:	Expert System for stamped-part design optimization.
Language:	Fortran
Inference Engine:	Gosseyn motor
Knowledge Representation:	Production Rules
Hardware Environment:	ND 560
State of Completion:	Prototype
Authors:	LMT [expansion unknown] in Cachan

Some Expert-System Development Tools Shown at Avignon

Name:	System 1
Functions:	Development of expert systems. Inference engine derived from Emycin (backward chaining). Knowledge representation: production rules with level of significance (heuristic knowledge) and object-attribute-value triad (knowledge of domain).
Language:	Interlisp-D
Hardware Environment:	Xerox 1100 series; later on under Vax 11/750 and 11/780
Authors:	FRAMENTEC [expansion unknown]
Remarks:	A version for 16-bit micros is also available.

Name:	Ourcin
Functions:	Inference engine oriented to the logic of propositions, not limited to Horn's clauses. Pseudo-natural-language interface available. Works by forward and backward chaining.
Language:	-
Hardware Environment:	-
Authors:	SEMA [Applied Mathematics Research Company]; INRIA [National Institute of Data-Processing and Automation Research]

Name:	Rosace
Functions:	Knowledge representation and management system based, among other things, on the concepts of structured objects. Includes a structure-definition language (objects, actions), a knowledge-handling language, consistency control, etc.
Language:	Lisp
Hardware Environment:	SM 90
Authors:	CNET [National Telecommunications Study Center] in Lannion

Name:	Logis
Functions:	Prolog written in Lisp, providing a link between Prolog clauses and the host-Lisp environment.
Language:	Lisp
Hardware Environment:	Lambda (LMI [expansion unknown]): LM-Logis version; Vax 11/750 and 11/780: NIL-Logis version; Multics: Maclisp-Logis version
Authors:	UTC [Compiegne Technology University]
Remarks:	Other Lisp versions of Prolog: Lislog, Prolisp, Lovlisp, LM-Prolog, etc.

Name:	Kes
Functions:	Development of expert systems. "Knowledge Engineering System" includes an inference engine and various interfaces making the creation of the knowledge base easier. Knowledge representation: semantic networks and production rules.
Language:	Lisp
Hardware Environment:	Univac and Vax
Authors	Software A&E (Great-Britain)

9294
CSO: 3698/555

DESCRIPTION OF FMS APPLICATION AT FRG OPEL PLANT

Duesseldorf VDI NACHRICHTEN in German 23 Mar 84 p 34

[Article: "Flexible System Manufactures 'Chaotically': Automatic Processing in the Assembly Line—But Individual Subareas Are Also Autonomous"]

> [Text] Modular, flexible, small-scale and medium-scale mass production--these have all been categories in which the "manufacturing technology" project support program had to come to the fore. This program, sponsored by the German Federal Ministry for Research and Technology has supported a project of the Diedesheim Machine Factory (owned at present by Hueller-Hille (Thyssen)) in 1980/1982 with 1.5 million marks of funding. An application of the research and development result has now been introduced at Opel in Ruesselsheim. Because the German Federal Ministry of Research and Technology funding gives only the initial incentive; advances must then take place under their own power.

When the transfer production line for the cylinder head of the 2.3-l diesel engine had already been set up the product developers brought in a subsequent design for turbo superchargers. The planners at Opel changed the order, recalled their chief Dipl Eng Herbert Eberts, and requisitioned a flexible manufacturing system which in addition was still equipped to handle the cylinder block of the turbo diesel.

Even the original design for the production line was based upon linked numerically controlled machines which are capable of processing workpieces on as many as five sides in succession, all in the same chucking. Dr Eng Hans Eberhard Frank of the Diedesheim Machine Factory emphasized that using the revolving machine tool of the multipath numerically controlled assembly machine called "Variocenter" it is also possible to operate multispindle drill heads. They can be changed in half an hour if it is necessary to set up for another workpiece. The drills, tap drills, milling machines or reaming tools, even the single-spindle ones, had to be supplemented for the cylinder head and cylinder block of the automatic ignition engine with turbo supercharger. Two PCT 600 processing centers were added which can also change multispindle heads. When necessary they take over every processing operation for which the system is equipped. This setup, specialized to a particular

workpiece, consumed only 20 percent of the investment costs, according to Eberts.

About 350 spindles are usable with metal-cutting tools under the present arrangement. But tools for testing and seam-fastening tasks can also be used.

The control process requires that the tools be replaced with sharp ones after 30 processing cycles. Drill holes up to 10 mm in diameter and smaller are finally scanned with a variety of test mandrels to determine whether possibly some drills have broken off. A dimension control checks the diameters of the valve drill holes in the cylinder head after drilling to verify manufacturing dimensions. If the dimension is getting close to the lower tolerance limit because the drill bit is wearing the cutting angle is automatically adjusted. Processed workpieces are checked by a PM 850 (Zeiss) coordinate-measuring device which determines whether tolerances are being maintained.

The closed circulating route provided for the workpiece pallets on the transfer production line would not have permitted each of the 30 pallets to be driven up to arbitrary processing stations. Therefore, Eberts informed us, exit tracks have been attached to the double-chain conveyor belt. The pallets, one of which carries a 40-ton workpiece, may be permitted to pile up since they are carried along rapidly at a rate of up to 24 meters per minute, using a frictional contact.

Workers insert the cylinder heads at two chucking locations, each opposite side being processed on the other pallet. At a third chucking location cylinder blocks are fastened. The jaws of the chucks close and open automatically. Every pallet receives an identification number via eight cams. Engineer Fritz W. Becker of Diedesheim explained that these are inductively read upon arrival at a machine.

The worker at the chucking location feeds into the main memory the program sequences for the processing operations which are to be carried out for the corresponding workpiece. Becker pointed out that the programs are not run by a computer but by a programmable control (SPS) having an arithmetic processor. This approach was given preference by the Diedesheimer subsidiary, IPB Pietsch, because programming languages familiar at Opel are usable with it.

This supervisory SPS is linked with a replacement SPS having the same features which can at any time take the place of the directing SPS if it should fail. A collecting line takes care of the data exchange between the 18 adapting SPS's (IPC 300) and the CNC controls of the machines (Sinumatic 3) and of the conveyor system. The inductive pickup reads the number of the pallet upon the latter's entrance and then the appropriate program is called up by the supervisory SPS. The machine begins to operate only after the information stored in its adaptation SPS agrees with that of the supervisory SPS.

If a machine goes out of action then the facility operator by means of a keyboard can select one of two switching programs: a workpiece exit program or a reworking program. In the case of exiting the point in the processing

which had been reached is determined via the stored tool number. As soon as the machine is back in operation the pallet returns from the detouring conveyor track into the processing position so that the residual processing may be completed.

If, for example, a broken drill remains stuck in the workpiece then the workpiece is exited to the chucking location. After the drill stump has been removed the pallet once again enters the conveyor. The adaptation SPS then determines from the rework interim record in the main memory just which processing still remains to be done. In this "steel and copper system," as Dr Eng H. Hucks of the Diedesheim parent organization, Thyssen Industries, expressed himself, the information is continuously kept up-to-date. Every type of workpiece may be processed in an arbitrary sequence.

The flexible manufacturing system in Building M-55 in Ruesselsheim is still being utilized only up to half of its capacity. Intake or exhaust pipes as well as transmission housings could also be processed in this system according to Frank even if they were made out of light metal. This facility which offers as it does a maximum of flexibility with a maximum of productivity, to quote Eberts, can also reduce replacement part storage costs.

In the past an estimated all-time demand was manufactured before manufacturing jigs are changed over or redesigned for mass production. In Building M-55 it would be possible to do rework at any time but also in addition it would be possible to accept changes in the product. If tools and pallets are ready for a new workpiece then it is necessary only to rework the programs.

There is already in operation at Opel a computer program with which it may be determined whether for a given rate of production it would be more economical to use fixed linked assembly machines or flexible numerically controlled machines in loose linking.

8008
CSO: 3698/518

BRIEFS

UK STUDIES MANUFACTURING SYSTEM--In order to continue to be active in the future in the sharply expanding market for fully automated fabrication facilities the two British enterprises International Computers Limited (ICL) and Rediffusion-Robot Systems Limited have as a first step toward later close cooperation embarked upon a study called "integrated automated fabrication systems." The aim is to find ways and means for linking together these two comprehensive areas of specialized knowledge. The ultimate aim is to produce fully integrated fabrication systems which convert detailed orders automatically into detailed production activities and instructions for control (for robots and entire machine tool units). The entire investigation turns upon basically the necessary software for production control. It will be the task of this software to plan with real time systems the activities of fabrication units, follow their progress in operations and transmit the requisite information to control systems which are directly linked with fabrication units. As a part of the project the studies team will build a prototype of an integrated manufacturing control system using ICL's "Perq" graphics computer for production control and using Rediffusion's "Controller 68000" for controlling the individual manufacturing units. Software (for connecting these devices and for simulating possible operations sequences) will be developed in a programming language which has not yet been defined and will test the reliability of the prototype fabrication control system. [Text] [Aarau EC WOCHE in German 14 Jun 84 p 11] 8008

CSO: 3698/529

SIEMENS DEVELOPS CAD SYSTEM FOR VLSI DESIGN

Wuerzburg ELEKTRONIK PRAXIS in German Apr 84 pp 78, 83

[Unattributed article: "Access to Complex Technologies under Development"]

> [Text] From the cell-oriented CAD-supported design process to the finished component--the Siemens IC Design Center, a pilot project until now, has now been released.

"VLSI technology had been mastered until now by only a few semiconductor manufacturers and some specialists. To be able to open the benefits of this technology to a broad range of developmental engineers, the design processes have to be automated even more." That is how Dr. Gerd Sandweg, department of modular design at Siemens, refers to the necessity, especially for small and medium-sized firms as well, of using more custom-made IC's to be competitive. The market data, cited by Professor Karl-Heinz Beckert, board member and head of the central engineering area at Siemens, after all shows "a demand for integrated circuits in MOS technology, which will grow from about 17 billion DM worldwide now by 250 percent to 60 billion DM by 1988." In the process, according to experts, the standard MOS circuit models will decline from 80 to 70 percent in the next five years while non-standard circuits will increase by 40 percent per year.

The second requirement is the development of automated methods which should also enable non-specialists to design VLSI components as non-standard models, and methods which, in addition to being profitable and fast, thus with a training period that is not too long, can also be used for small lots.

Computer Develops Circuits.

Under the well known name of Venus, for VLSI design and simulation, Siemens is already making the project a reality. With the Venus 1 design system for CMOS components, 5,000 gates per chip can be fully automatically designed; the Venus 2 system now being developed should bring this to 50,000 gates per chip. Cells, i.e. basic circuits which have already been developed and are available in a library, are used to design components. Venus 1 can now access about 100 of these cells which integrate standard cell circuits as well as gate arrays.

In future, general cells with any height and width, which can use whole microprocessor kernels as cells, and regular modules consisting of evenly structured cells, should also be available for the design process. Logic complexes with some 100,000 transistors can be implemented with the general cells, and up to 1 million transistors with the regular modules.

The design process runs through the steps of circuit design, simulation, testability analysis, chip design, quality control and the generation of manufacturing documentation. Then follows IC production and testing of the components.

During design input, a light pen is used to select circuit symbols which are in the data pages of the cell library or the corresponding logic blocks can be called by an alphanumeric procedure by the number assigned by the system. From this time on, the system automatically handles all necessary development steps such as logic simulation, layout and wiring, generation of the check bit pattern, etc. without further manual intervention.

Some engineers in the electrical engineering schools in German universities have already had the opportunity of developing their own IC's.

8545
CSO: 3698/507

STUDY REVEALS WEAKNESSES OF FRG ELECTRONICS INDUSTRY

Munich SUEDDEUTSCHE ZEITUNG in German 21 May 84 p 25

[Article: "Microelectronics Future Remains Uncertain: IFO Expects the German Market Share To Drop/But Good Prospects in the Telecommunications Sector"]

> [Text] Munich (dpa/vwd)--Microelectronics continues to be the Achilles' heel of the German electronics industry. In a recent study this has been the conclusion of the IFO [Institute for Economic Research]. But the weaknesses of the FRG in microelectronics and in data processing could possibly be compensated by telecommunications. According to an estimate made by this Munich institute the telecommunications market could grow from 7.3 billion marks in 1982 to 8.86 billion marks in 1987. Production is expected to increase from 9.2 to as much as 12.2 billion marks.

Chances of achieving the leading world market position in telecommunications and more particularly in optoelectronics could be negated in the opinion of IFO by the monopoly position of the German Federal Postal System. The latter has at the present not committed itself completely to glass-fiber technology. And priority for glass-fiber use in the next 5 years would still have little effect upon German telecommunications production, but in view of the long startup times the necessary decisions must be made today.

High Growth

Altogether according to IFO the German electronics industry may look forward to a very differentiated future. The market for consumer electronics according to IFO will be characterized in the coming years by the widespread use of the videorecorder and by impulses received from the home computer market. From 1985/86 on there will probably be effects from the spread of cable television and monitor screen text. The German market for consumer electronics is expected to grow by 1987 from 9 billion marks at an annual rate of 6.1 percent to a good 12.1 billion marks. Since the demand for videorecorders is for the most part being met by the Japanese production of those items will probably increase only by 2.9 percent a year to 9.95 (8.6) billion marks.

IFO expects the greatest growth to be in the market for data processing (EDP). In this area the volume by 1987 will reach almost 19 billion marks after a figure of 9.2 billion marks in 1982. With regard to production, one might reckon with a value of 16.9 (8.5) billion marks and an annual growth of 14.6 percent. In industrial electronics (measuring, controlling and regulating technology as well as medical technology) the German industry will probably profit from the general upswing in competition and production could broaden out by 7.7 percent annually to 15.3 (10.5) billion marks with a market growth of 6 percent to 10.5 (7.5) billion marks.

The market for structural components is also expected to profit from competition so that at a growth rate of 7 percent annually integrated circuits should increase at least twice as fast. The 1987 market is expected to be of the order of 6.1 billion as compared with 4.3 billion marks in 1982. German production is expected to rise simultaneously by 4.4 percent to a good 4.5 (3.6) billion marks.

Over the middle term IFO expects that if the export situation remains unchanged German manufacturers will lose some ground. While the total electronics market in the FRG will increase by 1987 to 56.57 (1982: 37.441) billion marks at an annual rate of 8.6 percent, production will rise only by 7.7 percent to 58.746 (40.52) billion marks. Altogether the share of the market volume enjoyed by European production (Germany, France, Great Britain and Italy) from 1982 to 1987 in the electronics industry will drop by one point to 86 percent. In the subsectors it is expected that there will be a reversal in EDP by four points down to 74 percent and in structural components by three points down to 72 percent. In consumer electronics and in telecommunications the share is expected to remain unchanged at values of 63 and 112 percent, respectively, and will increase only in industrial electronics from 111 to 116 percent. The German share in total electronics production is expected, according to the study, to diminish in the period 1982 through 1987 from 42.9 to 42.3 percent.

8008
CSO: 3698/529

FINANCIAL REPORT OF MAJOR FRENCH ELECTRONICS COMPANIES

Paris ELECTRONIQUE ACTUALITES in French 22 Jun 84 p 24

[Article by Olivier Picon]

[Text] In 1983, for the second year in a row, the electronics industry no longer seemed to be invulnerable to the economic crisis. The financial results of the large well-rated companies, whose progress often slowed down or weakened during 1982, were nevertheless better as a whole than those of the preceding year.

The improved balance sheets are due to three major causes:

The additional charges levied againt the industry since 1981 are beginning to be digested; all in all, the government has sufficiently changed its policy to stop their escalation; similarly, most of the companies have managed to adapt their financial structures to high interest rates and to stop the climb of financial costs.

The activity has remained satisfactory; it is only at the end of the year that the public sector has brutally reduced its orders. While a pickup in orders is often difficult, the economic recovery in some foreign countries and the success of some of our products, have made it possible to balance the French slowdown with good business abroad.

For all the companies that are well established beyond our borders, the slippage of the franc compared to the previous year has been an improvement factor, significant for dollar billings.

CIT-Alcatel: Satisfactory

CIT-Alcatel's results are unquestionably difficult to assess, which gives rise to some uncomplimentary comments, but they are nevertheless rather encouraging. The net profit of the CIT group amounts to 185 million francs, but this figure does not compare to last year's because accounting methods have been modified in a way which actually reduces the profits. For identical methods, the growth has been 16 percent for the shareholders' cut (which does not include the slice of minority shareholders in some subsidiaries) as long as some exceptional elements are eliminated.

The number of exceptional elements has indeed been very large at CIT: the sale of Transac and Sintra has brought enormous added-value, while participation in the Intelautomatisme machine-tool business in Suez brought an enormous loss.

The latter has been deemed exceptional in a possibly questionable manner. Intelautomatisme is after all definitely a CIT subsidiary. However, the company promised the government to allocate a given sum to it, and not a cent more. To the extent to which two-thirds of this obligation has been met, the company believes that it is not far from having carried its load and that the deficit predicted for this year will not be "recurrent."

Under these conditions, CIT's improved performance is essentially due to a better year for the parent company. The Roneo, Friden, and CGA subsidiaries remain losers, but with prospects for a return to equilibrium for the second of them during this year, and for an improvement for the first. In our opinion, one of the favorable elements to be noted in CIT's accounts, is the 43 percent growth in the research budget from one year to the next, which shows that with a turnover increase of 16 percent, the company has been able to obtain a satisfactory profit and to prepare for the future.

CGE: Polemics

The parent company, CGE, also reports improved results: +16.3 percent in net profits with 534 million, without added-value and with identical accounting methods. But the remarkable performance is in the gross self-financing margin, with an improvement of 38.5 percent and 2463 million, which represents more than 4 percent of the 57.4 billion revenues. And since the share warrants recently issued by CGE are actually indexed to this gross margin, they are starting out very well.

It is well known that CGE's accounts have received a certain amount of criticism due to the departure of Societe Generale d'Entreprises-Sainrapt et Brice, which moved over to Saint-Gobain's jurisdiction. This departure was providential, since it exempted CGE from having to consolidate the enormous losses of this subsidiary, and allowed it to take into account only the losses suffered at the closing of the business. CGE cannot be blamed for having taken this action. It is acceptable accounting practice not to consolidate businesses that leave, even if their departure occurs "in extremis" at the end of the year, as in this case.

At Thomson, the enormous losses recorded in 1982 have been reduced. They dropped from 1933 million to 892 million, and include 318 million in exceptional losses instead of 1290 million. Without the telephone business, which is leaving the group and only 40 percent of which is currently owned, Thomson-CSF's deficit would have been down to 566 million.

Thomson-CSF does not give the details of its results by activities, but one can estimate that the profits of equipment and systems activities have exceeded one billion, that telephones must have cost on the order of one billion, and that components and medical must have cost several hundred million each.

The nationalized parent company, Thomson SA (former Thomson-Brandt) supported its subsidiary's deficit and has seen its consumer products sector undergo large losses in France. Its bottom line is thus 465 million in the red.

For Matra, this is the second disappointing year. The parent company profit went from 207 to 70 million. All things considered, and considering the negative pull of so-called "diversification" subsidiaries, profits are slightly better than in 1982 (+45 percent), but much lower than those of the parent company alone, since those are limited to about 34 million. But its president, Lagardiere, anticipates an increase in profits beginning this year with three times the results, followed in 1985 by a new improvement by one-half or even by a factor of two.

G3S: Better Despite SAT

The first entirely private group in electronic and electrical manufacturing, G3S, has had a variety of results: continued growth at Sagem, recovery at Signaux, and deterioration at SAT. Sagem's net profit reached 63.8 million, with a nearly 8 percent growth, but the true growth must be higher, of the order of 20 percent, as suggested by the 27 percent increase in operating profits.

The SAT subsidiary has skirted a deficit and eliminated its dividend. The fact that it has managed to obtain a small profit of the order of 6.5 million in operations, rather than 7.3 million in 1982, was ultimately a good surprise, as were the 19 million in profits posted by Silec, 50 percent of which is controlled by SAT, for which poor results were also feared.

However, Sagem's consolidated profits will not be swollen by its part in SAT's and Silec's gains. On the other hand, essentially thanks to its participation in Sagem, Signaux must post a consolidated profit of the order of 33 million. However, its own activity, which brought no returns, has recovered sufficiently to provide about 7 million in net profit. The reduction in financial costs to 2.4 percent of sales was one of the factors contributing to this return to a more acceptable situation.

The fates of Philips' two French subsidiaries are contradictory: nothing stops TRT's growth, while La Radiotechnique is suffering an unpleasant drop. For a 27 percent higher turnover, TRT posts a profit improved by 23 percent with not much more than 70 million, and probably more in real results. This performance was obtained despite the difficulties of the Omera-Segid subsidiary. The upcoming 1984 bodes well, but after that order books are rather difficult to fill.

La Radiotechnique has borne the full brunt of a deplorable year-end television market, and of the collapse of videorecorder demand. Its own operating profits are thus reduced by nine tenths. The consolidated profit drops by 80 percent despite a good contribution from the large RTC subsidiary, and is limited to less than 17 million. This "counter-performance" reduces the dividend by one-third.

For the other companies, good performances as a whole overshadow the poor. Merlin Gerin created a net profit of nearly 145 million, a figure that is difficult to compare to the previous one, but which can be estimated to be 30 percent higher. Intertechnique has expanded its margin by increasing its operating profit by 38 percent, for revenues that are 12 percent higher. But due to a two-fold increase in taxes, the net profit is only 9 percent better.

A good score was also posted by PM Labinal, which for a 13 percent growth in turnover has had a 45 percent growth in net profit. Here again, a reduction in financial costs plays a role, as does a development in exportations, increased productivity, and a brilliant subsidiary, Microturbo. Sfernice's 19.4 million profit, a 28.6 percent growth, is also a success reflecting the recovery of the components sector and the company's activities in the United States.

Judgement of La Telemecanique's accounts must be qualified. The declared profit is 107 million, and the real profit is higher. But the 34 percent increase is deceptive; it is partly due to lower taxes. The real improvement in the group's profits must instead be placed at about 8 percent, which is not so bad and is partly a consequence of lower financial costs, themselves associated with an improved product stock management.

In terms of bad surprises, we must mention Legrand, whose consolidated net profit dropped from 146.6 to 132 million. Is this the end of a magnificent growth period? Actually, the regression reflects only the accident of the Brasil subsidiary, which suffered from a "superdevaluation" of the cruzeiro. Without that, Legrand's profit would have increased by 6 percent.

Bad Surprises for Crouzet and Mors

Lastly, two very bad surprises must be noted for Crouzet and Mors. Crouzet, whose profits have been dropping for several years, went into the red by losing 24 million. The bad situation in automation components, the slowdown in aeronautics which affects the Sfena participation (which plays a certain role in the consolidated accounts), and some excess personnel, have hurt the Valence company.

Mors, whose recovery had been striking, falls back heavily with a deficit of 30 million. In fact, this money was lost in the mechanical sector (transmissions and gears), but the electronics activities did not return expected profits. The company is somewhat victim of its takeover bulimia. Reorganization costs, delays until new companies contribute their share and synergies take place, have postponed by one year the profit objectives. But they will be achieved only if the mechanical sector drain proves to be sealed.

11023
CSO: 3698/525

BRIEFS

RHONE-POULENC WAFER FACTORY--Rhone-Poulenc will invest FF 300 million--instead of FF 240 million as initially planned--in the construction of a silicon wafer factory in France. Rhone-Poulenc's financial arrangements with its U.S. partner in this venture, Siltec, have also been revised: the French company will control 66.5 percent of the Rhone-Siltec joint subsidiary that will operate the plant; under the initial agreement, the two partners were to contribute equal shares. Finally, Rhone-Poulenc will acquire 5 percent of the Siltec stock, instead of 10 percent. The plant should become operational by the end of this year. [Text] [Paris ZERO UN INFORMATIQUE HEBDO in French 9 July 84 p 30] 9294

THOMSON 16-BIT MICROPROCESSOR--The EF-68008 is a 16-bit microprocessor with an 8-bit data bus and 32-bit internal registers. Thomson Semiconductors is offering it in 8, 10 and 12.5 MHz versions. The EF-68008 code is compatible with the 68000 code. Price: FF 200 (exclusive of tax). [Text] [Paris ZERO UN INFORMATIQUE HEBDO in French 2 July 84 p 13] 9294

THOMSON MILITARY, SPACE DIVISION--Paris (np). Thomson Semiconductors, the semiconductor component branch of the Thomson firm, has set up its own activity for business with customers in defense, aeronautics and astronautics. The Military and Space Division has been established in Saint-Egreve near Grenoble and is headed by Rene Besamat. [Text] [Leinfelden-Echterdingen EEE in German 8 May 84 p 4] 8545

CSO: 3698/507

FRG 1985 RESEARCH BUDGET TO INCREASE 3 PERCENT

Paris AFP SCIENCES in French 5 July 84 p 16

[Text] Bonn--The West German Research and Technology Ministry's 1985 budget will total DM 7.26 billion, or approximately Fr 22 billion, up 3 percent over its 1984 budget. This figure is part of the overall 1985 appropriations bill passed the night of 3-4 August by the Bonn Government, which totals DM 260.2 billion, up only 1.2 percent over that of 1984.

The research budget increase is thus twice the overall average increase in government spending for this coming year.

The Research Ministry's expenditures in millions of DM are broken down as follows:

Item	1984	1985	Percent Variation
Total	7,049	7,260	+ 3
1. Research institutes	2,470	2,605	+ 5.5
2. International projects	688	724	+ 5.1
3. Subsidies to domestic projects (except nuclear)	2,881	2,903	+ 0.7
4. Nuclear project subsidies	752	713	- 5.1
5. Indirect aid	271	304	+12
6. Administration	51	51	

Worthy of note too is the fact that the Council of Ministers also agreed on the principle of tax abatements for all purchasers of automobiles equipped with a catalyzer, thus avoiding the use of leaded gasoline. The details of these tax benefits have not yet been worked out. The minister of interior for the environment, Mr Friedrich Zimmerman, decided in July 1983 to introduce unleaded gas into the RFA beginning in 1986. This measure is not applicable at the European level until 1989.

9238
CSO: 3698/530

DETAILS OF R&D EXPENDITURES, FIELDS IN FRG TO 1987

Duesseldorf VDI NACHRICHTEN in German 15 Jun 84 p 2

[Article: "Priorities in Future Research and Development Subsidies: In the Seventh German Federal Research Report Minister Riesenhuber Lists Focal Points and Trends"]

> [Text] The federal report "Research VII" recently issued by the government outlines in a preliminary review those research fields and technology fields for which government subsidies are to be especially emphasized in the future. On a percentage basis between 1983 and 1987 (at an average annual total increase of 2.4 percent) the outlays for manufacturing technology are to rise annually by an average of 36.8 percent from 38.5 million marks to 135 million marks annually. This reflects the second program set up in 1983 to intensively subsidize this area, an area which comparatively speaking is one of the "small" areas among a total of 23 funding focal points.

Among the "big" focal points there is the area of "innovation, rationalization, scientific-technological departmental services" for which the highest funding growth rate has been provided, an average of 10.9 percent (from 819 to 1,239 million marks).

Remarkably high at an annual average increase of 9.7 percent is the support which is to be given to selected areas of fundamental research in the natural sciences. Since the outlays for energy research and energy technology are to drop from 2,492 to 2,119 million marks between 1983 and 1987, defense research and technology has moved forward to a position of priority among the focal points of subsidy with an increase annually by 4.8 percent from 1,558 to 2,241 million marks.

Four areas are singled out in the federal report "Research VII" as key technologies with special significance for the future: information technology, materials technology, biotechnology and laser technology.

Biotechnology at the present time is in a "very productive phase of its development." Its future importance is comparable to that of microelectronics and computer technology.

In addition to subsidizing the expansion of the Society for Biotechnological Research (GBF) in Braunschweig into a supraregional interdisciplinary research center there will also be funding for foundational subareas in the form of projects.

Government support is concentrating upon three thematic areas. In genetic technology support is being given to focal projects in advanced schools and in public institutions. In addition, there are flanking support measures involving the establishment of genetics companies and a program of stipends.

In the area of cell cultures and cell fusion technology product-oriented industrial projects are being subsidized with the participation of advanced school groups.

In the biological process technique of enzyme technology biotechnical processes and bioreactors are being developed for the acquisition of nutritional materials and fodder, chemical raw materials and other products of biosynthesis.

In materials research the areas of fundamental research and of technology are linked together as hardly anywhere else. Focal areas are steel research, metallurgy, metallic and ceramic heavy-duty materials, corrosion, friction and wear.

Besides the recently founded Max Planck Institute for Polymer Research in Mainz additional focal points in polymer research are being set up in advanced schools and in other research facilities which will cooperate with industry in the interest of rapid conversion of their results into industrial usefulness.

In the "Physical Technologies" program three fields shall be given support at an average support growth rate of 5.8 percent annually (from 92 to 115 million marks). These three fields are laser technology, surface technology and low-temperature technology.

8008
CSO: 3698/516

FRENCH, ITALIAN FIRMS DABBLE IN VENTURE CAPITAL

Paris L'USINE NOUVELLE in French Supplement to 5 Jul 84 pp 6, 8

[Article by Marie-Jeanne Pasquette]

[Text] The past several weeks have seen the frequent coming together of French financiers and industrialists around a common center of interest: Venture capital.

As a magic formula partly responsible for the success of small American high-technology firms, venture capital is exciting the appetite of French investors--among them banks, insurance companies, but also industrial groups that see in this form of financial investment a strategic tool of the first order.

Olivetti's example should be highly instructive in this regard. Since 1980, the group has invested some $55 million as a minor partner in innovative small enterprises in the office automation, data processing and even telematics sectors. The number of such enterprises totals 36: 30 in the United States, 5 in Europe and 1 in Japan. The group's objective is simple: To acquire new products and technologies in sectors that hold a long-term interest for the Italian firm.

Thus also, the firm can concentrate its own research and development efforts on shorter-term projects and use the potential of its marketing organization to its full capacity in the distribution of products other than its own. Another point of crucial interest: Its role as a venture capitalist positions it as a privileged observer of the American market and products.

Privileged Targets: New Technologies

Carlo De Benedetti, president of the group, has, however, placed a condition on this venture-capital activity in support of the firm's innovative strategy: It must be financially self supporting. Today, this goal has been achieved.

The Olivetti portfolio totals $120 million, which represents a rate of return on its investments of around 40 percent per annum!

Nevertheless, the monetary aspects of these operations is secondary. This industrial group judges each investment individually from the standpoint of its impact on the Olivetti image. To further separate its venture-capital activity from its industrial activity, it has just created the firm Olivetti Partners in the Dutch Antilles with a paid-in capital of $20 million, which will be added to by institutional investors essentially oriented towards the European PMI's [Small- and Medium-Sized Industries] that develop softwares.

Among French industrial groups using venture capital as a strategic tool, Elf-Aquitaine has chalked up several years of experience. In France, first with Inovelf, a fully owned subsidiary since 1979, the oil group has invested partnership capital in enterprises engaged in developing innovative techniques, products or methods in conjunction with the group's current or future activities (oil, chemicals, biotechnology, microelectronics, etc).

Elf-Aquitaine's "homing head" (this is what Inovelf is called) has already invested in some 15 firms in France, including France Embryon, SMT Goupil, Atac Diffusion, Air-machines. Participation rarely exceeds 49 percent of the firm's capital, and leads finally, upon disengagement from Inovelf, either to a listing of the firm on the Paris Exchange or to its becoming a subsidiary of Alf-Aquitaine or SANOFI [Sanitation and Health Finance Corporation].

Inovelf has also formed a venture capital structure on the other side of the Atlantic: Elf Technologies Inc [ETI]. Created in 1980, ETI has already placed some $36 million in 34 high technology enterprises. Without minimizing the financial importance of the project, the main objective of these investments is first of all industrial: To open a privileged window on the new technologies being developed in the United States. In the most favorable cases, these investments have enabled technology transfers through research agreements, licensing and/or commercial acquisition agreements.

MATRA [Mechanics, Aviation and Traction Company], Renault, Roussel-UCLAF [expansion unknown], Bull and CISI [International Data Processing Services Company] (a subsidiary of the AEC [Atomic Energy Commission]) also formed jointly, last year, a GEI [economic interest group] in the United States for the purpose of seeking out venture-capital investments in the high technologies. Having been assigned this operation, this investment company has submitted some 350 dossiers recommending capital participations or licensing agreements.

From the same standpoint, MATRA and SESA [expansion unknown] have bought into Midi Robot, created early this year at the instigation of CNRS [National Center for Scientific Research] researchers in the field of robotics.

Another French initiative in the United States has been the forming of Agritech, a finance corporation set up to invest in American PMI's in the biotechnologies. Among the industrial firms taking part in this venture are: Elf, Lesieur and Lafarge-Coppee. With a minor participation by Orsan, a subsidiary of the latter ($1 million), the new firm is banking on venture capital to acquire new technologies in the seeds sector. In France, with the same thing in mind, it has just acquired 10 percent of Claeys-Luck.

FRAMATOME [Franco-American Atomic Construction Company], which is seeking new channels for diversification, also sees in this approach a way to branch out into state-of-the-art technologies.

In the electronics domain, the Compagnie Electro-Commerciale, a marketing subsidiary of CGE [General Electric Company], intends to use venture capital for industrial ends. It aims to buy into small electronics marketing firms: PME's [Small- and Medium-Sized Businesses] that do not hesitate to launch themselves into the distribution of innovative products, a risk that the CGE subsidiary does not want to take directly. Manuel de Almeida, manager of industrial affairs, feels that the firm's size is poorly suited for this type of direct activity: "We are not large enough to take the risk and not small enough to have at our disposal someone who will take it." For the moment, there is really no group strategy in this regard, the CGE asserts. Partnership participations often result via on-the-spot subsidiaries, particularly in the United States.

Bull, on the other hand, says candidly it is irresistibly drawn by the Olivetti experience. Together with Trilogue (microelectronic components), Vertex (peripherals) and Ridge Computer (data miniprocessors) the group has got its feet wet in the waters of venture capital. "We are seeking participations of no more than 10 to 15 percent plus managing directorships," confirms Jacques Zyss, Bull's manager for development and cooperation. For the French number one in data processing, venture capital represents an additional chance to overtake its foreign competitors.

The idea of big firms buying into small enterprises is by no means of very recent date. What is new is the purpose behind it. The intent is no longer to absorb the PMI, suffocating its spirit of enterprise and innovation. On the contrary, venture capital now aims at stimulating the ardor of the entrepreneur. If the game is played according to the rules--that is, allowing the "bought-into" partner to enjoy complete freedom, and being prepared to make fast decisions when that partner requests them--success for both partners is virtually assured.

9238
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FIELDS, NUMBER OF FRG PATENT FILINGS IN 1983

Frankfurt/Main FRANKFURTER ALLGEMEINE ZEITUNG in German 18 Jul 84 p 11

[Article: "Large Deficit in Patent Transactions With Foreign Countries--Bundesbank Declares That the Electrotechnical Industry Remains the Most Important Licensee"]

[Text] Hal. Frankfurt, 17 July. The deficit of the FRG in patent and licensing transactions abroad has in the last year at a value of about 1.5 billion marks been distinctly greater than in the years 1980 through 1982 in which it had been regressing. The payments for patents, licenses, processes, copyrights and trademarks amounting to 3.01 billion marks could be compared in 1983 with income amounting to 1.5 billion marks. These figures emerge from the most recent monthly report of the German Bundesbank. The Bundesbank conjectures that this development is an expression of the new economic revival in the FRG. They consider that this revival has had the consequence that entrepreneurs once again were actively purchasing patents and licenses abroad while at the same time also selling them in other countries.

However, they point out that the money in patent and license transactions should not be overvalued. This does not represent the only form of international transfer of technological knowledge. International technology exchange, they observe, also takes place with regard to the export of high-value goods, with respect to the sale of complete industrial installations and with regard to the erection of production and sales facilities abroad.

Moreover, the book balance figure does not give a complete picture in view of the fact that it includes only those transactions which also result in payments or accounts receivable. Because the mutual exchange of knowledge such as takes place very frequently between interdependent enterprises and which results in no payments is not reported.

In its report the Bundesbank distinguishes especially between enterprises having significant foreign capital participation--these are subsidiaries of foreign parent companies--and those not having significant foreign capital participation. The latter enterprises usually themselves have subsidiaries abroad. In the case of the second category of enterprises the 1983 surplus receipts increased to 577 million marks (1982: 509 million marks). The increase in these surplus receipts is attributed by the Bundesbank primarily

to a decrease in expenditures for patents and licenses. In the case of the enterprises having significant foreign capital participation on the other hand the surplus expenditures in the past year rose to 1.745 billion marks following a value of 1.516 billion marks in the year 1982. A full 70 percent of the expenditures in 1983 occurred at subsidiaries of foreign companies involved in the manufacturing industry. The payments made by these enterprises were almost exclusively made to the foreign parent companies. In the case of enterprises without significant foreign capital participation conversely over 70 percent of the receipts were received by those which themselves have subsidiaries abroad.

According to the view of the German Bundesbank the patent and license transaction payments made in the FRG relate for the most part to payments for manufacturing licenses for which the fee payments took the form of a profit-sharing arrangement.

The most important licensers and licensees in the FRG were said to be the electrotechnical industry including data processing, the chemical industry and the metals industry. In 1983 these three branches of industry accounted for a total of 88 percent of the receipts and 67 percent of the outlays. The electrotechnical industry--including there especially the subsidiaries of foreign concerns--is the most important licensee in the FRG. These latter enterprises accounted last year for over 96 percent of the expenditures for patents and licenses, an amount which came to 915 million marks and which had increased by more than 40 percent in the past 2 years. As a licenser the electrotechnical industry occupies third place. The receipts--preponderantly from enterprises without foreign capital participation--amounted to 268 million marks and have not increased since 1981. The total deficit of the electrotechnical industry in patent and license activities has increased substantially in 1983. This deficit was composed of 856 million mark expenditure surplus on the part of enterprises having foreign capital participation and a receipts surplus of 209 million marks on the part of firms not having foreign participation. The chemical industry continues to be the most important licenser. Last year's receipts of 509 million marks were a good 20 percent higher than 2 years ago. The expenditures of 519 million marks have grown somewhat less in comparison with previous years.

Altogether on the expenditures side the payments are concentrated upon four countries: the United States (56 percent), Switzerland (17 percent), the Netherlands (12 percent) and France (5 percent). Only the United States and Great Britain show surpluses in patent and license transactions.

8008
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PROJECTS, RESOURCES, MANPOWER OF ESPRIT PROGRAM

Paris FUTURIBLES in French June 84 pp 26-36

[Article by Gilbert-Francois Caty, EEC official: "The ESPRIT Program"]

[Excerpts] Characteristics of the ESPRIT Program

What are the characteristics of this 10-year research program whose financing over the next 10 years has been set at 1.5 billion ECUs [European Currency Units], 50 percent of which will be provided by the Community? Briefly, it is a joint industrial and strategic research program.[1]

At operational level, ESPRIT [European Strategic Program for Research and Development in Information Technology] consists of a number of transnational consortia of research laboratories: to qualify for financial aid from the Community, a research program must be submitted by at least two laboratories located on the territories of two countries belonging to the Community. The pilot stage of the ESPRIT program, which was started in 1983 at a cost of 23 million ECUs, provided an opportunity to test this mode of operation. After a systematic information campaign that reached over 2,000 research institutions throughout the 10 member countries, the European Commission received over 200 projects in February 1983, and it selected 38 consortia. These agreements, which were arrived at within only a few months, went far beyond the requirements expressed: 19 of these consortia--i.e. half of them--consist of 4 or more research organizations; half of them also include laboratories belonging to 3 or more member countries.

The laboratories belonging to a consortium and the consortia will be connected to one another by an electronic information-exchange system, the EIES (Esprit Information Exchange System), which is based on the ISO [International Standardization Organization] reference model for open-system interconnection. The EIES capabilities include: computer-to-computer communication, computer remote access, electronic mail and message routing, computer-managed conferencing in open or closed circuit, exchange of computerized files, graphs, application programs and systems. The EIES will make it possible to draft and edit texts and reports jointly; it will also be able to store, retrieve and disseminate documentary and statistical data.

The EIES will be provided with several access levels to encourage the dissemination of data on current research while protecting any patent rights. The

details of the agreements between members of a single consortium will be entirely left to the parties, but the Commission will make sure that agreements comply with cooperation principles: the agreements will have to guarantee that each partner will have access to the results of the group's research during the whole term of the consortium. The research teams should be given access to the knowledge acquired by other consortia "under reasonable conditions," provided that they require this knowledge for their own work.

ESPRIT is essentially an industrial research program: its objective is to give to the European data-processing industry the technological base it needs to become competitive on international markets during the next decade. But the research involved is of a pre-competitive nature; this is why several firms, which otherwise compete on the market, can belong to the same consortium. We all know that Europe is rich in brains and major discoveries in the field of information technology, but it has not been able to translate these assets into competitive industrial products.

The dominant industrial characteristic is acknowledged in the fact that, as a rule, the consortia will have to include at least two independent industrial partners established in two different member countries of the Community. This rule, which is mandatory for type-A projects, could be waived for type-B projects, if the ESPRIT Management Committee gives its agreement (this Committee consists of representatives of member countries and of the Commission). Indeed, the program distinguishes two classes of projects:

- type-A projects require an infrastructure and considerable human and financial resources; their strategic perspective must be clearly defined and it must remain constant so as to ensure the continuity of operations and provide the scope required to yield long-term results. These systemic activities will form the skeleton of the ESPRIT program and will absorb roughly 75 percent of its resources;

- type-B projects, on the other hand, require only a flexible infrastructure; they rely on individual initiative rather than on a systemic approach. These projects, which are designed to fill the gaps that may remain between type-A projects, have a more general scope so that, being more flexible and subject to lesser timetable constraints, they leave the door open to innovation.

The ESPRIT program is not restricted to industrial laboratories alone: it is open to all laboratories in the Community which are working on data-processing technologies--public and university laboratories as well as laboratories of small and medium-size firms; laboratories of European firms as well as laboratories of non-European firms established on the territory of the 10 member countries. It is to privilege laboratories which do not belong to large industrial groups that 25 percent of the ESPRIT budget are reserved to type-B projects and that in addition Community financing for such projects can waive the 50-percent rule.

In this case, too, the ESPRIT pilot stage taught us a lot: of the 38 projects selected, 15 involve only large companies; 4 associate large and medium-size firms. Thus, half of the consortia consisted, to various degrees, of large firms, public research centers and university laboratories.

ESPRIT Program - Pilot Stage

Number of Participants in the Projects*

- 9 projects with 2 participants
- 10 projects with 3 participants
- 10 projects with 4 participants
- 4 projects with 5 participants
- 3 projects with 6 participants
- 1 project with 8 participants
- 1 project with 9 participants

Cooperation Among Various Types of Organizations*

- 15 projects involving large firms
- 6 projects involving large firms, universities and research centers
- 4 projects involving large firms and research centers
- 4 projects involving large and small firms
- 3 projects involving large and small firms and research centers
- 2 projects involving large and small firms, universities and research centers
- 2 projects involving large firms and universities
- 1 project involving small firms and research centers
- 1 project involving small firms and a university

Collaboration Across the Borders*

- 19 projects involving 2 member countries
- 9 projects involving 3 member countries
- 8 projects involving 4 member countries
- 2 projects involving 5 member countries

Participation of Member Countries in the Projects*

- Belgian organizations participate in 6 projects
- Danish organizations participate in 3 projects
- German organizations participate in 25 projects
- French organizations participate in 21 projects
- Greek organizations participate in 3 projects
- Irish organizations participate in 4 projects
- Italian organizations participate in 15 projects
- Dutch organizations participate in 10 projects
- British organizations participate in 21 projects

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* Subcontractors not included. The figures given include only the prime contractors and partners.

ESPRIT Program - Contemplated Resource Breakdown (Man-Years)

Sub-Program	1st Year	2nd Year	3rd Year	4th Year	5th Year	Totals
1. Advanced microelectronics	186	258	360	410	456	1,670
2. Software technology	177	317	343	318	285	1,440
3. Advanced data processing	140	281	392	441	441	1,695
4. Office automation	210	310	440	390	100	1,450
5. Computer-integrated manufacturing	121	216	215	220	172	944

The third distinctive characteristic of the ESPRIT program is, as its name indicates, its strategic character. Strategic, first, through the mobilization of means: close to 2,000 man-years over 5 years, with a budget of 1.5 billion ECUs, i.e. close to 50 percent of the cost of pre-competitive research in information technologies. The ESPRIT program also derives its strategic character from the selection of sectors on which research must concentrate. The program focusses on technological factors in which expertise must be acquired to control the long-term development of the information technologies: advanced microelectronics, software technology (leading to industrial software-production), advanced data processing (leading in particular to the fifth-generation computer and to "artificial intelligence"), to which should be added two other fields selected because of their potential for economic growth and their wide technological spectrum: office automation and computer-integrated manufacturing (also called factory automation). Microelectronics and advanced data processing will receive preferential treatment when resources are allocated.

Because of its strategic nature, the ESPRIT program must be able to evolve. Therefore, far from being set once and for all, the working program will be drawn up every year, in a 5-year prospect. The annual ESPRIT cycle also involves the evaluation of current research projects and it calls for proposals from the consortia. The working program, which serves as a basis in establishing research proposals, will result from an extensive participation of the scientific community, following a "call for contributions" issued in February of each year. Thus, the 1984 working program was based on the work of some 300 experts selected from among close to 1,000 candidates working in the industry, in universities or in research centers, who volunteered their contributions. The program was sent to over 6,000 research institutions in Community member countries.

The annual working program for the following year will be submitted to the Council for approval in November, on the recommendation of the ESPRIT Advisory Committee (some 15 people from the industry, small and medium-size firms, research organization, large user sectors, all sitting on the Commitee in a personal capacity) and following the decision of the Management Committee ruling by a qualified majority.

ESPRIT Program - Overall Resources (Man-Years). Operations Started During the First Stage (1984-1988)

Projects Starting In:	Year											Total 1984 through 1993
	Pilot Projects (0)	1984 (1)	1985 (2)	1986 (3)	1987 (4)	1988 (5)	1989 (6)	1990 (7)	1991 (8)	1992 (9)	1993 (10)	
Year 0	230	325	327	192	125	30						999
Year 1		420	551	629	540	519	20					2,679
Year 2			547	766	670	545	140					2,668
Year 3				328	428	450	256	68				1,530
Year 4					204	276	180	85	45			790
Year 5						92	140	125	105	80	60	602
Total (man-years)	230	745	1,425	1,915	1,967	1,912	736	278	150	80	60	9,268

Some Questions Raised by the ESPRIT Program

Thus set up, the ESPRIT program raises a number of questions, not all of which have found an answer.

Will it be adequate to restore balance with the United States and Japan within just a few years? Certainly, ambitious as it may be, the ESPRIT program cannot do that alone. It is nothing more than the "research" facet of a whole in which telecommunications and standardization play an equally decisive part. It is significant that, simultaneously with the ESPRIT program, the Community launched a program of action in these other two fields,[2] which have already achieved significant results.

Is it not going to sanction the overwhelming pre-eminence of the "12 leaders" of the electronics industry? We must agree that their active participation is one prerequisite to the success of the ESPRIT program, if only because these "leaders" alone account for close to 90 percent of all industrial research in information technologies taking place in the Community. But, although their participation may be indispensable, it should not be exclusive. In this respect, both the consortium structure adopted and the experience acquired during the pilot stage show that small and medium-size firms have their chances just as much as universities. For the time being, their increased participation in the ESPRIT program is limited by the European context (which is not favorable to the emergence of "Silicon Valleys" and innovating firms using venture capital) rather than by any concealed determination to restrict their contribution.

The extremely flexible structure of the ESPRIT program--transnational consortia, which make possible the convergence of state and industrial efforts--especially through German, British and French programs closely articulated on the orientations of the ESPRIT program; the constant adaptation of the program to prevailing technological conditions--a working program revised annually; the permanent mobilization of 2,000 researchers in advanced technologies: all these exceptional assets were brought together by the ESPRIT program promoters and augur well for its future. At any rate, the success of such a complex "structure" fully justifies the praise that Senator Robert Pontillon recently bestowed on the program:

"In a Community suffering from a financial and institutional crisis, the ESPRIT program is one of our few remaining reasons to believe in Europe, to trust that it will find in itself the ways to its recovery. It effectively shows the way to those who are trying to implement new policies and, in particular, to create a field where industry and research can work together, failing which the Community is doomed to be left behind in the race for new technologies."[3]

FOOTNOTES

1. As an institution, the ESPRIT program is one of the services of the Commission. The program is carried out by a "task force on information technologies and telecommunications" which, initially, was an integral part of the General Directorate of Industrial Affairs and the Domestic Market (D.G. III). This task force is headed by a general manager which is directly accountable to the vice-president, Etienne Davignon.

2. In the context of the "task force on information technologies and telecommunications" which manages the esprit program.

3. R. Pontillon: "The European Strategic Program for Research and Development in Information Technologies (ESPRIT program)--Conclusions." Parliamentary Delegation to the European Communities, Senate, 5 April 1984.

9294
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NETHERLANDS DIRECTOR OF INDUSTRY ON HIGH-TECHNOLOGY POLICY

Rotterdam NRC HANDELSBLAD in Dutch 20 Jun 84 Supplement p 3

[Interview with Drs. [Doctoral Candidate] H. Leliveld, Director General for Industry at the Ministry of Economic Affairs, by Paul Friese: "Director General Drs. H. Leliveld's New Style at Economic Affairs: 'We're Picking Up The Signals'"; date and place not given]

> [Excerpts] "If industry comes along with something nice, we're glad to pick it up." The General Directorate for Industry, under the direction of Drs. H. Lelivelt, has been striving, for some time, for a more alert policy than before. Support for trade and industry now includes more than just financial aid.
>
> The man behind the shadows on the subtle interplay between department and entrepreneur.

Leliveld reveals that the Department of Economic Affairs has started a project with the West Germans in the field of high technology. "It's a matter of an entirely new generation of integrated circuits, electronic components. The West German government has roughly the same philosophy on industrial policy as we do. The project has started out very smoothly, with much enthusiasm from all concerned parties, Philips, Siemens, the West German government and ourselves, and its's progressing very energetically."

According to Leliveld, the project is still in the preliminary phase. But "in the Federal Republic the budgetary funds for this have already been more or less set aside, while the Netherlands are at the point of entering into that commitment. We're now discussing the distribution codes and the nature of activities in the realm of research and production. If it ever gets off the ground, it could yield imitations in other countries and in other industries."

[Question] "Is the project also intended to safeguard the importation of components for the computer industry?"

[Answer] "Philips, of course, has pretty big microchip factories in Hamburg and Nijmegen. But I think that you can, in fact, manage the problem of supply

with initiatives like this. The project is really also a good example of European cooperation."

[Question] "According to the projections, investments in the metal industry are going to rise by around twenty percent this year, primarily as a result of activities at Hoogovens and Volvo Car, two concerns that receive strong support from Economic Affairs. Does Leliveld interpret such an expectation as the sign of a good policy that should now also be applied to other industries?"

[Answer] "I think we're too impatient. As soon as the economy revives, investments should rise at the same time as well. It would be very nice, if that were so. But, of course, given the financial situation in many industries and the overcapacity, that isn't so. We can keep our fingers crossed and hope that the upturn will take hold and that we'll really see a recovery in investments over the next one and a half or two years.

"The particular cases you mention are, fortunately, two examples of a successful policy. But I don't want to generalize this. It isn't true that we have to financially support industries for investments to be attractive again."

[Question] "Informatics and the renovation of production are getting priority in your industrial policy. Why not biotechnology as well?"

[Answer] "We're paying attention to that too. Biotechnology is one of four research programs we've initiated. But information is of essential importance in every respect; this is very far-reaching, all the things involved here covers a vastly large ares. "Look, of course you have to limit your policy to a certain number of things. Thus it is that our philosophy is that the signals have to come from industry itself. From this subtle interplay between the department and industry there emerge a number of areas that receive special attention. Biotechnology certainly belongs here as well."

[Question] "In the realm of biotechnology the Netherlands hold very strong trump cards, certainly for the nineties."

[Answer] "Once again, this is one of four research programs."

[Question] "But there it's a matter of long-term research that is not being carried out by the industry itself."

[Answer] "Yes indeed, but it isn't any ivory-tower research. It takes place in consultation with industry. I don't know, off the top of my head, precisely what's being researched, but I do know that it's a matter of research that goes further than what is being done or could be done by any firm."

[Question] "What sort of interest does industry have in this sort of research?"

[Answer] "Ultimately, it must lead to new products. Biotechnology is now on the agenda of the industrial ministers of the EC. Not high on the agenda yet, but there is consideration of possible European cooperation."

[Question] "Shouldn't biotechnology receive more consideration precisely because it's such a strong trump card of the Netherlands? Just think of concerns like Wessanen, Gist-Brocades, Heineken."

[Answer] "I agree with you that we have a number of very strong firms in the area, companies that can also financially afford a thing or two. But I think that there still has to be a balance between that which we as a department take on with governmental funds and that which these companies can do themselves. This is not a branch of industry that deals in the problems."

[Question] "Then it's no longer of matter, in your policy, of supporting companies that deal in possibilities?"

[Answer] "You have to seek a balance. Three or four years ago, on our own initiative, we had already brought all the companies in the field of biotechnology around the table. At the time, we told them: You have an enormous lead, you are very strong, couldn't we do something jointly now? So, one presents something like this to the companies. We said: If you have a problem we can help with or play a role in, we'll do so gladly. In the end, we were worried about the suction from abroad because of the taboo against biotechnology research that was present here. One of my tasks is to prevent such a braindrain.

"Moreover, I expect to shortly see concrete results from the conversations we're conducting with the biotechnology industry."

[Question] "Isn't it already too late. Wouldn't it be much smarter to increase our lead over foreign countries before they've caught up?"

[Answer] "I'm not so afraid that they will overtake us, because the industry itself is exploiting the lead."

[Question] "This expectation you perhaps also had ten years ago with respect to informatics?"

[Answer] "No, that I didn't have."

[Question] "What do you think of the criticism, from the side of the entrepeneurs, that you really could have shown quite a bit more activity in the realm of the software industry?"

[Answer] "I find that criticism oversimplified. I, too, think that the government could have done more than it did. But I think it's too simple to raise the suggestion now that if the government had only taken a timely and active role with extensive orders, we wouldn't have lagged behind.

"To a great extent, industry itself did nothing about it. To put it in a nuanced way, I think that the fault lay with both sides. More could've been done, but at the time we obviously weren't ripe for it."

[Question] "The software industry reproaches you for not having seen the enormous possibilities that existed at the time."

[Answer] "On the whole, this complaint is just. We didn't attach such a priority to it then as we do now. But you always have to wonder how that comes about."

[Question] "How did that come about?"

[Answer] "We don't invent new markets here, of course, let alone new products. If we could do that, we wouldn't be burdened with Economic Affairs."

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CSO: 3698/502

BRIEFS

FRG RESEARCH BUDGET INCREASES--According to a study by the Battele Institute in Frankfurt am Main the research budget of the FRG will increase this year nominally by 6 percent to more than 50 billion marks. Thus 2.75 billion marks more have been assigned to the research area than in the preceding year. With an expected inflation of less than 3 percent the real growth will be above 3 percent. Thus after four slender years the gradual approach to equality with international developments in research is this year again under way. Nevertheless, there is need for still further efforts and a still greater dynamism if the existing gap in this international comparison is again to be closed. With this research budget measured in terms of total social product the FRG will be among the front-line research nations. But since the United States and Japan in recent years had substantially higher growth rates the FRG's distance from these nations has become greater. While research personnel in the FRG has doubled in the last 20 years still since the end of the seventies it has been stagnating at the level reached then. In 1981 375,000 people were in fulltime employment, about one-third being active as researchers (127,000 fulltime personnel). An additional third accounted for technical personnel and one-third administrative and auxiliary personnel. About 60 percent of all researchers are in industry. In the international comparison it appears that the United States and Japan operate in the research sector with a much higher personnel capacity, with the marked expansion in scientific personnel in the last 10 years being especially striking. [Excerpts] [Duesseldorf VDI NACHRICHTEN in German 6 Jul 84 p 12] 8008

NETHERLANDS NEW RESEARCH ALLOTMENT--The Hague, 20 Jul--Economics Minister Gijs van Aardenne has allocated 1.1 billion guilders for a five-year plan to subsidize the personnel costs incurred in industrial research and development, the Economics Ministry said here today. It said the minister hoped the new subsidy plan, which will be effective as from October 1, would contribute to the creation of new products, processes, systems and services. The ministry said the total annual subsidies of some 220 million guilders would be awarded retroactively to offset the relatively high personnel costs in the Netherlands. Subsidies would be granted according to a bracket system, the ministry said. The first bracket would allow a subsidy of 40 per cent of personnel costs up to 300,000 guilders, while the second would grant 15 per cent for costs ranging between 300,000 and 2.5 million guilders. The costs of contracted research and development work would also be eligible for subsidy, the ministry said. [Text] [The Hague ANP NEWS BULLETIN in English 21 Jul 84 pp 1-2]

BULL REORGANIZES GENERAL STAFF--Paris--Bull, France's number one data processing firm, has just reorganized its general staff, creating an Industrial Directorate headed by Mr Christian Marchand, and putting Mr Philippe Picard at the head of the group's Networks and Group Communications Directorate, the firm announced on 4 July, adding that the new Industrial Directorate, as part of Bull's top management, will exercise direct responsibility for "coordinating the industrial tooling and for improving the production methods of the different units of the group." Bull has made quality of its manufactures one of its priorities for 1984. Mr Christian Marchand, a graduate of the Ecole Polytechnique and an alumnus of the National Higher School of Telecommunications, has held various positions of responsibility with the DGA [General Directorate for Weaponry]. Since 1979, he has been the industrial manager of a division of the Thomson group. In the Networks and Group Communications Directorate, with responsibility for communications standards of Bull's new products and network architectures, Mr Philippe Picard replaces Mr Claude Boulle, who has been named research and development manager of Bull Transac (office automation). Mr Picard, a graduate of the Ecole Polytechnique and general telecommunications engineer, has worked with the DGT [General Directorate for Telecommunications] throughout most of his career; there he was specifically responsible for the launching of the Transpac public network. He joined Bull on 2 April 1984. [Text] [Paris AFP SCIENCES in French 5 July 84 p 16] 9238

CSO: 3698/530

EUROPEAN VIEWS ON U.S. ACTIONS IN COCOM

Paris L'USINE NOUVELLE in French 26 Jul -2 Aug 84 p 31

[Article by Francois Roche: "Strategic Exports: More Restrictions"]

> [Text] The United States have just added new items to the list of industrial products whose export to East Bloc countries is "prohibited." European countries are in a bind and may have to give up a large contract with Bulgaria.

The last COCOM [NATO Coordination Committee] meeting, which took place a few days ago in Paris, once again marked the U.S. determination to impose strict restrictions on technology exports to Communist Bloc countries. Indeed, the committee decided to add telephone exchanges of the last generation, all software included in equipment already on the list, and minicomputers to the list of industrial products requiring export authorizations. The complete list of industrial products which can no longer be freely sold to East Bloc countries will be published by COCOM members before the end of the year.

Already, we can say that the United States prevailed over their allies. Their reasons are of two kinds. First, both on their territory and in Europe, they have discovered legal and illegal networks that made it easy for the USSR to obtain "sensitive" data and products from the West. But, mainly, by adding more items to the list of embargoed products, the United States want to disorganize, at least temporarily, certain sectors of the Soviet industry, in particular the electric components and the data-processing sectors.

By tightening controls, the United States are also attempting to impose upon their allies the principle of extraterritoriality of U.S. legislation (so as to be able to prohibit to a greater or lesser degree the re-exportation of U.S. technology from the countries which have bought it).

This harder U.S. line will have serious consequences for the European industry. According to a recent OECD survey, technology transfers from the West to the East since 1970 amounted to $50 billion for manufactured products alone. All in all, 3 to 5 percent of Western exports to East Bloc countries are now on the COCOM list.

To take an example, French exports to centralized-economy countries so far this year amount to FF 20.5 billion, i.e. 5 percent of its total exports. Even if these amounts seem modest, the extension of the list to include telecommunication equipment, software and minicomputers will pose new and serious problems.

What is happening now in Bulgaria is very significant in this respect. A few months ago, Sofia issued an invitation to bid to modernize its communications system. Although the Bulgarians remain discreet on this project, a British source estimates it at FF 500 million to 1 billion over 5 years. All large telecommunications companies in the world answered the invitation to bid.

The COCOM decision to place telephone exchanges of the last generation on the list of products requiring an export authorization places these companies in a difficult position. The English companies GEC [expansion unknown] and Plessey indicated last week that they would agree to withdraw their offers as long as other companies (beginning with Ericsson, as Sweden is not a member of the COCOM) did the same. Indeed, the equipment offered by the British manufacturers, the "System X," contains components supplied by U.S. companies --Intel, National Semiconductor and Texas Instruments. If the Swedes maintain their offer (they are discreet but efficient) GEC and Plessey would have to apply for a special COCOM authorization. But we fail to see how the other bidders could grant to a competitor what would be denied to them.

The complex operating rules of the COCOM (any exception must be approved unanimously by the 15 members) plays into the hands of the United States. Such a situation may occur again in other sectors and other countries. For that reason, the manner in which the Bulgarian contract will be honored, or the conditions under which it may be turned down by Western companies, will set a precedent.

Negotiations among COCOM members will resume early next fall to determine more accurately the range of application of the recent decisions. The French remain reserved. Negotiations with the Bulgarians continue, but CIT-Alcatel could not fail to abide by any COCOM decision.

At any rate, exports of "sensitive" products to East Bloc countries will now give rise to bitter haggling between the United States and their allies, and that will not make the task of French enterprises easier, as they are already encountering difficulties in the USSR.

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FRG, CHINA SIGN AGREEMENT FOR SPACE R&D COOPERATION

Duesseldorf VDI NACHRICHTEN in German 23 Mar 84 p 2

[Article: "Cooperation in Space Technology: The FRG and China Improve Cooperation"]

> [Text] On 7 March an agreement was signed in Bonn between the FRG and the People's Republic of China relating to cooperation in civilian space research and technology. Dr Heinz Riesenhuber, the German federal minister for research, took this occasion in speaking to the Chinese minister for the astronautical industry, Zhang Jun, to emphasize the capabilities of the German space industry. Since as far back as 1978 there has existed a German-Chinese draft agreement regarding scientific-technological cooperation.

The new agreement which came about within the context of the latter includes particularly industrial cooperation with both countries in the development and production of satellite systems: television and radio and telecommunications and weather satellite systems and other satellite technologies for scientific experiments.

The agreement provides for an exchange of scientists, engineers and other specialists participating in joint research and development efforts. Also provided for are consultation and exchange of experience, joint scientific-technological studies and projects, exchange of scientific information and documentation and joint symposia. On the occasion of the signing of this agreement minister Riesenhuber pointed out that China is pushing the development of a modern telecommunications satellite system and a satellite system of high transmitting power for serving its population with radio and television. In order to accomplish these projects which are among about 60 key projects to which China has assigned national priority and which represent a substantial volume of investment China is seeking cooperation abroad, especially with the FRG.

German industry has already made concrete proposals to the People's Republic of China for accomplishing the Chinese plans. With the signing of this agreement the position of the German space and electronics industry with

respect to contracts to be released at the end of 1984 has been improved. A Chinese delegation of experts had collected information about the design proposal in February from MBB/Erno.

Of special importance in this astronautical agreement is the linking of research activities and the transformation of the results of cooperation into industrial consequences. Hence the exchange of experts and the exchange of information which have been agreed upon include besides research facilities also industrial firms. In the event that a contract partner should want to exploit industrially the results of this cooperation in research and technology then by the agreement he will do this with preference being given to enterprises in the partner country.

The People's Republic of China can already exhibit substantial successes in space exploration. China launched its first satellite in 1970 using its own launching rocket. A number of scientific and technological satellites of increasing complexity were launched with further developed versions of this launching rocket. The basic infrastructure has been organized and is being continuously further developed. Within the framework of the cooperative activity which since 1976 has existed between the Max Planck Society and the Academia Sinica more and more joint research projects are being carried out. This cooperative activity was initiated by a joint statement which was also made public on 7 March in Bonn. The research projects include amongst others: meteorite research (Max Planck Institute for Chemistry and Nuclear Physics), paleontology of the marine Devonian (various German universities), paleontology of the global events of the Cretaceous/Tertiary transition (University of Munich and University of Bonn), geodetic measurements (Darmstadt Technical Advanced School), radio astronomy (Max Planck Institute for Radio Astronomy), laser research (Max Planck Institute for Quantum Optics), pharmacology of medicinal plants (University of Tuebingen), zoology (State Zoological Collection, Munich), ceramics (Max Planck Institute for Metals Research), flashlight photolysis (Max Planck Institute for Radiation Chemistry).

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BRIEFS

MACHINE TOOL ELECTRONICS TO USSR--The Industrial Equipment Division (Erbach/Odenwald) of the Robert Bosch Company, Inc., in Stuttgart has received from the state Soviet foreign trade organization Stankoimport/Stankodetal a contract for the delivery of electrical and electronic equipment for machine tools. The contract has a value totaling 24 million marks. In detail it involves CNC controls, stored program controls and electrical servodrives. Delivery is to be this year. Business relations have existed between the Bosch Industrial Equipment Division and the Stankoimport organization for the past 10 years. The contracts let out by the Soviet foreign trade organization have been tending to steadily increase. [Text] [Duesseldorf VDI-Z in German No 9, May 84 p IV] 8008

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